Report for the year 1977

Commissioner of Public Health

Western Australia

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REPORT of the Commissioner of Public Health for the year 1977

Presented to both Houses of Parliament

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The Honourable R. L. Young
MINISTER FOR HEALTH

Sir,

I have the honour to submit the Report of the Department of Public Health for the year 1977.

There has been a further steady growth and expansion of preventive health services in Western Australia. I commend the reports of branches to you and can assure you that, without exception, all officers from the branches have worked exceedingly hard and effectively to promote and further the public health of the people of Western Australia. May I express my gratitude to them for their loyalty and co-operation.

JAMES COLUMBA McNULTY,
M.B., B.C.H., B.A.O., D.I.H., D.P.H., F.A.C.M.A.

Commissioner of Public Health.

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LEGISLATION

The legislative amendments which were undertaken during the year were:—

Physiotherapists Act—No. 9 of 1977, minor amendment to the composition of the Board.

Clean Air—The schedule under the Clean Air Act was extended on 10/6/77 to include stockyards etc. and on 26/8/77 to include certain construction sites.

Pharmacy Act—No. 25 of 1977, the minimum age for registration as a pharmacist was changed from 21 years to 18 years of age.

REGULATIONS

Changes made during the year were:—

Noise Abatement—23/9/77—Order exempting the Provisions of the Act to sheet piling, trench sheeting and bearing piles.

Poisons Regulations—Amendments were made on 26/8/77 relating to the prescribing of drugs for veterinary purposes and the labelling of poisonous and hazardous substances. An addition was also made on 4/11/77 to TETRACHLORETHANE under Appendix E.

Nurses Regulations—4/11/77—modifying educational standards for student nurses and the registration of nursing aides.

Health—Venereal Disease Regulations 5/8/77—introducing the laboratory notification of V.D.

Health—Pesticide Regulations 26/8/77—restricting specified pesticides to particular crops in certain areas of the State.

Additionally, minor amendments were made to the Physiotherapists Regulations (same as Act) and the Meat Inspection and Branding Regulations.

STATE HEALTH LABORATORY SERVICES

The Director, Dr. V. Blackman, reports a sustained increase in the work load of the State Health Laboratories, but skilled management has maintained cost efficiency and there has been a fall in the cost per specimen examined.

A pilot charging scheme for pathology testing has been introduced and full scale charging will commence in January, 1978. Progress towards amalgamated laboratories continues and it is hoped that when microbiology laboratories are amalgamated consideration can be given to Immunology-Serology and Pharmacology-Toxicology.

Plans are well advanced to regionalise laboratories and this will be gradually effected during 1978.

During the year Dr. E. M. Mackay-Scollay, who had been Chief Microbiologist, and Mr. D. Baker, Principal Technologist, retired. Both of these men made a major contribution to the work and the development of the laboratories and will be sadly missed.

The wide range of activities of this service are detailed in the Director's report. A highly efficient complete medical laboratory service is provided for all the recognised non-teaching hospitals throughout the State. Quality control is excellent and a satisfactory standard of results has been achieved throughout with some specialised areas maintaining an above average standard at an international and national level.

Staff members continue to contribute to the literature. There was an interesting public health report on salmonella isolations from samples of a wide range of fauna in association with ecological studies on Rottnest Island.

CHEST AND TUBERCULOSIS SERVICES

Dr. R. M. Porter retired as Director of the Branch after 20 years service, during which he made a major contribution towards the treatment and eradication of pulmonary tuberculosis in Western Australia. He was succeeded by Dr. K. J. M. Carruthers.

What had been formerly the Tuberculosis Branch was renamed the Chest and Tuberculosis Services Branch to reflect the Branch's greater interest in chronic respiratory diseases of all types, including tuberculosis. The medical association with the teaching hospitals has been further developed and strengthened.

There was a slight increase in the total number of notifications of pulmonary tuberculosis, but it is not believed that this has any particular significance.

The incidence of tuberculosis in migrants continues to be approximately twice that in the Australian born, but it is important to note that this disease is rarely apparent at the time of migration. A significant number of these came from Burma or South-East Asia where the relative lack of facilities and inadequate treatment may result in infection by drug resistant organisms leading in turn to difficulties in treatment.

EPIDEMIOLOGY AND SPECIAL SERVICES

The success of the immunisation campaign depends upon the activities of Dr. Roy Allen and his officers and the co-ordination/co-operation of local authorities and general practitioners throughout Western Australia, with the assistance of Community and Child Health Services in remote areas.

The year 1977 was the seventh year of the rubella campaign in secondary schools and there is an acceptance rate of nearly 80 per cent. A third mobile immunisation clinic will be brought into operation in 1978 and will provide an improved and more regular service for people in country districts.

Twenty-six cases of malaria were reported and investigated. The importance of notification of malaria must be emphasised so that family contacts can be examined and local epidemics prevented.

VENEREAL DISEASES CONTROL BRANCH

The number of patient attendances continues to increase but there has been a highly significant drop in the Venereal Disease notification rate. In comparison with 1976, the 1977 figures show a decrease of 37 per cent in the total number of notified cases, from 2 593 to 1 668.

Fluctuations in the incidence rate of venereal diseases notification are common and there is no room for complacency. However, one would like to think that the dedication and enthusiasm of the staff of this clinic, led by Dr. Arthur Newnham, is having a real impact on the incidence of the disease. The steady rise in "new patient" attendances since the clinic was opened in 1977 would encourage that belief.

Notification of the disease and follow-up and detection of infected contacts is a necessary public health measure on the part of all doctors involved in the diagnosis of these diseases.

COMMUNITY AND CHILD HEALTH SERVICES

The amalgamation of the Community and Child Health Services Branch, under Dr. Dick Roberts, which includes School Health and the Child Development Centre, has been very successful. It has further provided an opportunity for a considerable degree of regionalisation.

Funds from the Community Health Programme have enabled the Branch to extend its work into such areas as migrant health, refugees, women's refuges and the care of the homeless and lonely people in our society.

Over the past five years the Community Health Section reports a reduction in infectious diseases but these still remain a significant cause of morbidity. The correlation with poor housing and overcrowding, inadequate sanitation and water supply and infective disease is evident and the report points out clearly that unless these factors are improved no amount of therapy or of health education will produce any dramatic changes.

There is a great deal of interest in the detailed reports and of the reports of the medical audits. The Fitzroy Crossing oral health survey documents an attempt to identify dental health problems in an entire community and concluded that the oral health of people seen at Fitzroy Crossing is very poor. Attempts to remedy this will be commenced in 1978.

There is evidence of growing awareness and understanding of the problems of alcoholism among Aborigines. A committee of Aborigines was formed in Perth, with Government Department officers as advisers to co-ordinate preventive and rehabilitation programmes. Most of the Assistants and Aides in the Branch have attended a training programme with the Alcohol and Drug Authority and are engaged in counselling and setting up "dry" groups.

The medical screening of refugees is taxing the Branch's resources, but the staff are acutely aware of the need to continue this vital public health function. Wherever possible, medical problems brought to light at the screening examination are treated and considerable effort is being made to facilitate the refugees smooth transition to utilisation of the normal available medical and health services. Serious problems, of course, remain.

The Infant Mortality Rate shows a further decrease as compared with 1976. There has been a steady decline since the peak year of 1973. The whole State infant mortality figure of 12·2 per thousand live births is very satisfactory when compared with interstate and international standards.

In School Health, the extension of the High School Nurses programme has proceeded and pre-school children in Day Care are now completely covered in the metropolitan area by the Pre-school Health Team.

The normal activities of the School Health Section were continued and a successful attempt made to consolidate the development and expansion that had taken place in previous years.

The new building for the Child Development Centre commenced operation in September, 1977 and a Team approach has been used. The Centre is mainly concerned with the pre-school group with problems of overall development, behaviour disturbances and parent/child management. It is encouraging that an increasing percentage of referrals are from family general practitioners and other educational and health professionals.

COMMUNITY HEALTH PROGRAMME

The Community Health Programme has remained under the close personal control of the Director-General of Public Health, Dr. Lawson J. Holman. As in previous years, the report should be read in full.

The Community Health Programme is a community based programme designed to provide health services to people living in areas which were seriously underserved with basic health care and to persons suffering from chronic disabilities with inadequate access to health care, despite the fact that they were living in otherwise well served areas. It is not an open-ended programme, but consists of a series of well-defined projects varying from the provision of a social worker to a voluntary organisation, to a multi-disciplinary community health centre. The provision of a block grant has allowed the State some flexibility in determining priorities, but restricted funds, allocation of moneys for a financial year only, absence of legislation, critical timing factors relating to State and Federal budgets, restrictions on staff ceilings, etc., make it a very difficult programme to administer. Despite this, the initiatives already taken by the Community Health Programme are universally worthwhile and successful.

For the reasons given above, there is a patch work quality about the programme and a stop and go type of development. Many years will be required for consolidation and the development of an inter-relationship between the varied projects.

Dr. Holman makes an interesting surmise in regard to the reduction in hospital bed days during 1977. He considers that it would be reasonable to claim that there was evidence that the Community Health Programme was providing a real alternative to expensive hospital care. The reduction in bed days is real, but the cause is likely to be complex and more evidence is required to determine the role of community based health services.

PHARMACEUTICAL SERVICES BRANCH

Mr. Bill Griffiths, Principal Pharmacist, provides as usual a very modest report on the activities of the Pharmaceutical Services Branch.

There were comprehensive amendments made to the prescribing of drugs for veterinary purposes and in the labelling of poisons and hazardous substances. The study and preparation of these and the close observance of the recommendations of the National Health and Medical Research Council is difficult and at times tedious work for which we are indebted to the staff of this Branch.

The Drugs of Dependence Monitoring System utilises the Australian Department of Health computer facilities, records and disseminates details of manufacture, formulation, imports, exports and sales to the wholesale and retail levels. The system is designed to draw attention to any irregularities in purchase and has proved valuable in minimising the risk of lawfully produced drugs being put to illicit use. The system also provides accurate figures on the consumption of all drugs covered by international conventions, together with the stocks held in Australia at any given time.

During the year, inspection of Pharmaceutical Poisons Registers received high priority, and revealed a marked increase of the prescribing of drugs of addiction in the treatment of drug addicts. Prescribing dropped sharply when action was commenced against doctors prescribing for addicts without authority, and the consumption of Methadone, in particular, steadily declined for the remainder of the year.

DENTAL HEALTH SERVICES

A routine dental service is provided in dental clinics to the population in rural and remote areas not otherwise provided with such a service. These services are provided in fixed clinics, mobile road units and by air.

At the end of 1977, the School Dental Service was operating in 180 primary schools. A total of nearly 70 000 pre-school and primary children, i.e. 50 per cent of enrolled primary school children were eligible for dental care. The Schools of Dental Therapy provided preventive dental services for a further 32 schools. A further 24 fixed and mobile therapy clinics are planned for 1978.

The emphasis in the school dental service is on preventive dental health and in health education.

The details in the report by the Director, Mr. J. Prichard, do not fairly reflect the skills and the enthusiasm of his staff of dentists, dental therapists and others.

This is a most successful public health programme and if funding continues at a satisfactory level, a service will be provided for every child in primary schools in Western Australia by the end of 1981.

NURSING ADMINISTRATION BRANCH

Miss Margaret Beard, Principal Director of Nursing, retired in 1977. She was highly esteemed and respected by colleagues and associates all over Western Australia. Miss E. L. Bohan was appointed Principal Director of Nursing to succeed Miss Beard.

Miss Bohan comments that staffing levels, even in country hospitals, have not been so difficult as usual to maintain due to availability of nurses for employment. In the metropolitan area job opportunities for registered nurses and registered nursing aides have been restricted to specialist fields of nursing.

Attention is drawn to the increase in the numbers of home births in recent years. Although the numbers are small (17 in 1977), there is evidence of an increase in trend in this area. Each home birth is notified and the circumstances investigated. In regard to some of these births, the circumstances have been far from ideal.

OCCUPATIONAL HEALTH AND CLEAN AIR

Dr. Alan Cumpston, the Director of Occupational Health, Clean Air and Noise Abatement Branch draws attention in his report to a number of interesting occupational health problems.

No new cases of asbestosis were detected, and for the fourth successive year there was no incidence of pulmonary tuberculosis in miners. Four new cases of mesothelioma were diagnosed and a Mesothelioma Register was commenced. The periodical survey of the Collie Coalfield revealed no new cases of workers' pneumoconiosis.

Despite regular inspection, continued advice and health education, sandblasting continues to pose a considerable health hazard to workers in this industry.

The activities of the Clean Air Section, under Mr. Ron Powell, and the results of monitoring programmes are of considerable interest. The co-operation of the public and of industry and their assistance in monitoring is noteworthy.

As in previous years, the report draws attention to the number of complaints which arise from the unfortunate siting of residential areas too close to certain dusty and smelly industries.

There are still many complaints of noise nuisance received by the noise Abatement Section and difficulties have been experienced with the application of the Noise Abatement (Annoyance of Residents) Regulations in respect of certain classes of noise nuisance. Revision of the regulations is well advanced.

There have been an increasing number of complaints of noise nuisance from traffic and although there have been considerable discussions with various Departments and Organisations and at the Interstate Noise Committee, there seems little hope of much short-term progress.

STATE X-RAY LABORATORY

Mr. Barry King, Physicist in Charge, presents the report of the Physics Division of the State X-Ray Laboratory. This Division is devoted to the administration of the Radiation Safety Act and undertakes the executive work of the Radiological Council.

The Division provides advice on radiation physics, radiation protection, monitoring and engages in a wide range of health education activities and in-service training for persons engaged in the various uses of radiation.

The Radiological Council under the new Radiation Safety Act, has been appointed with the Commissioner as Chairman and Members: Dr. J. Glancy, Dr. M. Quinlan, Dr. E. N. Maslen, Dr. A. Cumpston, Mr. R. W. Stanford and Mr. G. E. Bennett. The Physicist in Charge is Secretary.

As well as a Medical Advisory Committee and the Dental Advisory Committee, the new powers under the Act have required the appointment of an Industrial Radiation Committee, a Non-Ionising Radiation Committee and the Chiropractic Examining Panel.

It is reassuring to record the very great improvement in radiation protection as evidenced by the very low doses recorded on monitoring film badges. A very great deal of this improvement must be attributed to the activities of Mr. King and his staff.

The Division also provides the staff and facilities for the Radiation Protection office of the Queen Elizabeth II Medical Centre, which includes the Sir Charles Gairdner Hospital, the State Health Laboratory Services and the State X-ray Laboratory.

LIBRARY AND TECHNICAL INFORMATION SERVICE

The brief report by Mrs. B. Proud (Librarian) and Mrs. J. Davis (Technical Information Officer) conceals the major importance and influence of this service to the whole Department, to the Medical Department and a number of other associated organisations.

One of the most difficult duties is to keep staff abreast of recent discoveries, theories and techniques. The Branch has made progressive and successful steps in this regard, introducing an innovative programme of bringing the information to notice in a highly acceptable manner.

HEALTH SURVEYING BRANCH

Mr. Slattery, Chief Health Surveyor, provides details in his report of the wide and varied activities of this Branch in the environmental health field.

The Health Surveying Branch is engaged in a comprehensive, little known and little heralded routine monitoring and inspection activity of vital importance to the public health of the people of Western Australia. Changing life styles and habits require alertness, awareness and a flexible capacity to respond.

A nationwide alert regarding salmonella contamination of infant formula milk powder was a major incident and the co-ordinating and advisory role of the Commonwealth Department of Health is much appreciated.

There was a further increase in the number of established Caravan Parks in the State and a changing style of living, including a tendency toward permanency, overcrowding at peak holiday periods and dissatisfaction by tourists is posing problems. Departmental officers conducted a Statewide survey and collected detailed information regarding prevailing conditions in all parks. This reports has been studied by an Interdepartmental Working Party investigating current legislation, and a report will be issued in 1978.

The Solid Waste Disposal Committee and its supporting Technical Committee have been examining the existing four zone groupings of local authorities to determine whether some re-arrangement was necessary through geographic, economic or other advantage.

A number of proposals for the treatment of solid wastes by pulverisation or baling have also been examined. There is increasing interest in recycling proposals and although attractive, funding and economic viability seem to be insuperable hurdles at the moment. Currently the committees are studying a proposal to establish a liquid waste treatment plant to treat both septic and industrial toxic liquid wastes.

FOOD AND NUTRITION

The Food and Nutrition Officer, Mr. John Edinger, represents the Department at the State and Territories Food Legislation Working Party. This Working Party reports to the Health Ministers' Conference and is preparing a Uniform Food Bill.

During the year the Code of Practice for Processing, Transport, Handling, Storage and Sale of Frozen Foods was published. This Code of Practice should prove to be an invaluable guide to Health Surveyors and to persons involved in the food industry.

VITAL STATISTICS

Vital statistics are presented as summary indicators of certain Public Health and social trends.

At 2·3 per cent, population growth during the year remained low, reflecting principally the continued low levels of immigration. The rate of natural increase of the population continues to fall as the birth rate per thousand population maintains its decline.

VITAL STATISTICS (BIRTHS, DEATHS) (*a*)

	1972	1973	1974	1975	1976	1977
Mean Population—						
Males	(*c*)547 600	(*c*)557 400	(*c*)571 000	(*c*)585 200	(*c*)596 700	609 800
Females	(*c*)523 100	(*c*)533 200	(*c*)546 800	(*c*)561 700	(*c*)573 600	587 300
Births—						
Males	11 337	10 557	10 282	10 460	10 663	10 717
Females	10 840	9 953	9 925	9 878	10 007	9 934
Total	22 177	20 510	20 207	20 338	20 670	20 651
Birth rate per 1 000 of Mean Population	20·71	18·81	18·08	17·73	17·66	(*d*) 17·25
Deaths—						
Males	4 317	4 586	4 550	4 701	4 480	4 533
Females	3 124	3 259	3 228	3 271	3 260	3 366
Total	7 441	7 845	7 778	7 972	7 740	7 899
Death rate per 1 000 of Mean Population	6·95	7·19	6·96	6·95	6·61	6·60
Natural increase rate per 1 000 of Mean Population	13·76	11·61	11·12	10·78	11·05	10·65
Infant Mortality per 1 000 Live Births—						
Perth Statistical Division	13·1	16·0	13·1	11·2	10·9	11·3
Rest of State	20·6	25·1	22·2	17·5	17·4	13·7
Whole of State	15·7	19·2	16·2	13·3	13·2	12·2
Stillbirths (*b*)—						
Perth Statistical Division	173	173	170	146	156	120
Whole of State	258	270	274	236	242	190
Stillbirth rate per 1 000 total births	11·50	12·99	13·38	11·47	11·6	9·12

(*a*) Includes events among the total population, including Aborigines.
(*b*) The term "stillbirth" for registration purposes refers to a child not born alive, of at least 20 weeks gestation, or at least 400 grammes weight.
(*c*) Revised.
(*d*) Preliminary.

Note: Rates have been revised as a result of revision to the mean populations on which they are based.

It is gratifying to note that the death rate per thousand population has remained stable at the low level achieved in 1976.

Infant mortality declined once again, the 1977 rate of 12·2 infant deaths per thousand live births being the lowest ever recorded in this State. It is especially rewarding to note the marked reduction in infant mortality in country areas. The stillbirth rate has also dropped dramatically to 9·1 stillbirths per thousand total births. These figures are indicative of improved standards of health care during the antenatal period, delivery and the first year of life.

HEALTH STATISTICS BRANCH

The Statistics Branch under Dr. Marlene Lugg, is held in very high regard not only in this State, but throughout Australia. Its success is due to the continued cooperation and help of the hospital and medical personnel in all public and private hospitals, and to the Australian Bureau of Statistics, and its importance in management is becoming increasingly recognised.

Planning and research for health services in hospitals is largely dependent on an adequate data base. There is a great deal to be learnt by a study of the details in the various tables.

There was again an increase in hospitalisation for accidental injury, but the in-hospital death rate from these admissions has continued its decline.

There has been almost no variation in the hospitalisation patterns by disease, sex or age groups. The importance of the collection of this data and its significance to public health generally cannot be over-estimated.

MATERNAL MORTALITY COMMITTEE

The Maternal Mortality Committee has continued its invaluable work into the investigation into the causes and circumstances of all maternal deaths in Western Australia.

In 1977, there were 3 deaths investigated by the Committee. The maternal death rate in Western Australia has now reached a very low level which compares favourably with anywhere else in the world.

Appendix I

State Health Laboratory Services

V. Blackman,
M.B.B.S., M.R.C.S., L.R.C.P., F.R.C. Path., F.R.C.P.A., D.P.H., D.C.P.
Director

INTRODUCTION

This year has again been one of sustained growth in work load, though there are signs that the rate of increase of such is slowing, no doubt as a result of the attention directed to the over-ordering and cost of pathology tests by the Government and popular press. Specimens received by the Central Laboratories increased by 10·2 per cent and Branch Laboratories by 17·2 per cent, an overall increase of 12·4 per cent. Specimens received for analysis in both Central and Branch Laboratories have grown from 382 519 in 1972 to 745 007 in 1977, or 94·8 per cent increase. In the same period staff has grown from 333 (1972) to 441 (December 1977) or an increase of 32·4 per cent, and most of this increase occurred in the earlier years; recently staff increases have been kept within the 2–3 per cent guidelines of the State Government. Once again, the cost per specimen has shown no rise, which means, in real money terms at the current rate of inflation, a fall in costs.

Undoubtedly some containment of growth rate must occur in the near future. The increasing use of technology in modern medicine, of which pathology services are only a part, has been one of the factors leading to the rapid increase of health care costs which in the latter part of the year in question began to exercise the minds of Governments. This situation is common to all developed nations and the main cause is the cost of hospital services. Even in our own statistics one can appreciate the lack of growth in the older fields—clinical bacteriology and public health bacteriology for example, the slower rate of increase in technological subjects which expanded dramatically some years ago, e.g. biochemistry, and the rapid increase in newer technologies, e.g. toxicology, radioisotopes. As all these are demand services, i.e. done at the behest of another medical practitioner, restraint will only come by re-education of such primary sources, and one important aspect of this is the culling of requests by senior staff (preferably medically qualified) in the laboratory, with explanation and advice to the practitioner population.

COMMON SERVICES

Those services providing the necessary support facilities for sections engaged in specialist work.

ADMINISTRATION—FINANCE

While a careful watch can be maintained for most of the financial year on expenditure, there is a definite difficulty in assessing in advance the charges that are made to our budget in the last month of the financial year, mainly by agencies over which we have little control—freight charges, water, power and lighting etc. It is obvious that various departments conduct a "tidying-up" routine at the end of the financial year.

In October a pilot charging scheme for pathology testing was introduced, in preparation for the full scale charging to commence in January 1978. This pilot scheme was to accustom staff both centrally and in branches to the requirements of the Health Insurance Act. Charges were raised primarily against patients whose tests were referred to us from other laboratory organisations.

In the field of administration it became clearer that with the success of the combined laboratories in clinical chemistry and haematology, there was a considerable organisational advantage in associations between similar laboratories. Arrangements for work sharing were made with the University Clinical Immunology unit and with the University Department of Clinical Pharmacology. These will no doubt grow into firmer associations similar to our present combined units. Co-operation continued with the University Department of Pathology also, where relationships have become definitely closer. The position of the Commissioner *vis-a-vis* Public Health pathology and microbiology was well recognised, and it became obvious that the Branch Laboratories are best organised and regarded as a separate division of the whole complex administratively organised by the Principal Technologist on behalf of the Director.

BRANCH LABORATORIES

Regionalisation proposals were agreed to by the Commissioner of Public Health and Medical Services and the Public Service Board. The Senior Technologist in larger regional centres (Derby, Port Hedland, Geraldton, Bunbury, Narrogin, and hopefully, Kalgoorlie) will assume some of the responsibilities at present discharged centrally—i.e. stores flow, reliefs for short leave, illnesses etc., and some pathology testing at present done in Perth. This should reduce travel expenses and cost of freight to some extent, besides leading to a greater local involvement in the pathology scene. The first such region established was in the Pilbara and encompassed laboratories at Port Hedland, Dampier, Tom Price and Newman. Most Branch Laboratories reported a growth in work during the year. With the separation of Armadale/Kelmscott laboratory from Bentley, the latter registered some fall in work load. In general, a pattern emerges of three levels of laboratory based on work load—the smaller with 4 000 to 6 000 specimens per year, intermediate 8 000 to 12 000 and larger units which have upward of 14 000 specimens which are mainly the regional laboratories. Staffing, testing and supplying can be rationalised on this classification. Unfortunately, geography and local demand does not allow for closure or amalgamation of certain small units.

The policy of central control of methodologies, supply of reagents and equipment and quality control was continued, and results in economy of money and labour, and uniform standards throughout the service.

The Esperance Branch Laboratory was re-sited in new premises within the hospital as part of expansion of the hospital, and similarly the Busselton laboratory and Bridgetown collection centre will be re-sited when the respective buildings are completed.

All branches were visited at least twice by senior personnel during the year to allow on the spot reviews of each area.

Staff housing, although still a problem, has been improved considerably and further improvement is anticipated next year.

TECHNICAL SERVICE AND SUPPLY

The provision of a stores area at the Queen Elizabeth II Medical Centre has not so far been made, and the stores area in the basement of the North laboratory block is really only a distribution unit. Bulk stores were still held in Murray Street, but the building used was required for development by the Commonwealth Government—its owner. In consequence, a new stores area was acquired on lease in Cambridge Street (No. 115) and bulk stores, packing, clerical work etc. was moved there. Although spacious, the stores are on three levels; nevertheless it is a considerable improvement on the Central Laboratory basement and Murray Street.

Two new mobile laboratories (caravans) were commissioned and put into service (June 1977).

Fine Instrument Stores has been relocated to assist in the accommodation of the new fees section.

Reagent Preparation

A new quality control section has been added to the reagent preparation laboratory at Swanbourne Hospital. Previously this work had been done by the Clinical Biochemistry Department.

TRANSPORT AND COMMUNICATION

Transport arrangements have not altered. All reports are now sent out by the Specimen Reception and Report area. This is necessary so that billing can be arranged immediately reports are made. Facsimile printers were moved into this area, and the telex unit will follow. It is intended that the concentrator linking the laboratories to the large departmental computer will be put into this area.

STAFF

Staff changes are shown below:—

Position	Recruited	Resigned	Retired
Chief Microbiologist	....	....	1
Pathologist/Cytologist	3	....	....
Principal Technologist	....	....	1
Laboratory Technologist in Charge	....	1	....
Senior Technologists	....	2	....
Technologist	17	6	....
Cytotechnician	1	1	....
Chemist and Research Officer	1	....	....
Technical Officer	2	1	....
Laboratory Assistant	30	25	1
Autopsy Assistant	1	1	....
General Assistant	1	1	....
Nurse	....	2	....
Laboratory Attendant	18	12	2
Clerk	3	....	....
Typist	4	2	....
Clerical Assistant	2	1	....
Storeman/Security Officer	3	2	1

Newly created staff positions numbered 15.

Important changes of senior staff are as follows:—

Dr. E. M. Mackey-Scollay, Chief Microbiologist, retired on 30/9/77.

Mr. D. Baker, Principal Technologist, retired on 21/12/77.

Dr. J. Shapiro, Pathologist/Cytologist, commenced duty 11/7/77.

Dr. K. Williams, accepted contract work as Histopathologist/Cytologist on a sessional basis on 1/1/77, having resigned from full time service on 31/12/76.

Dr. J. Carroll, accepted contract work as Histopathologist/Cytologist on a sessional basis on 1/1/77, having resigned from full time service on 31/12/76.

Dr. B. Wild, Registrar in Microbiology, commenced on 10/1/77.

Dr. D. Spagnolo, Registrar in Anatomical Pathology, commenced on 1/2/77.

We regret to announce that Mr. J. Browning, recently retired Assistant Principal Technologist, died during the year.

ACCOMMODATION—CENTRAL LABORATORIES

Final plans were being drawn up for the North Block completion (now known as "J" Block). Due to financial considerations, it is not envisaged that tenders will be called until the end of 1978.

The media preparation area is unsatisfactory: a modular system is hardly easily adaptable to a flow through factory-type operation, nor is a basement easily kept cool when large autoclaves are operating. In addition, the work load is now considerably greater than had been anticipated. With the demand on site for prime laboratory space, due to increased demand, complexity and greater integration of units, a move was made and approval obtained to station media making off site in an open plan factory building.

Alterations were made to enlarge the specimen reception area so that a common data acquisition, reception, reporting and billing area could be accommodated.

EQUIPMENT

Needs are assessed centrally, and distribution made to all units including branches. The Instrument Repair unit continues to function satisfactorily, especially since the appointment of a second instrument technician experienced in electronics. A replacement service means that a Branch Laboratory would not be inactive in any area for more than 24 hours due to instrument fault.

SPECIMEN RECEPTION AND REPORTS

A new area for specimen reception was organised so that both requests and specimens could move and be distributed easily. Original request forms do not leave the unit; photocopied request forms are sent with specimens. This allows for billing information to be collected on the original request forms and also provides a check for reports on the requests, which are all issued from the unit. At the end of the year, pilot studies in charging procedures were undertaken. With computerisation, it will become even easier to organise flow through, check and billing systems, as well as producing statistics. It may not be appreciated that it is in the handling of requests, reports and specimens that most laboratory mistakes and confusions arise.

LIBRARY

The efficiency of the unit was increased by arranging a small committee to consider library matters; this involved the Director, Principal Technologist and the Librarian of the Public Health Department.

COMPUTERS

Towards the end of the year the Director was appointed Chairman of a Laboratory Computer Systems Project Committee responsible to the Health Computing Services Management Committee chaired by Dr. McNulty. This Project Committee was given the responsibility of organising the computerisation of laboratory reporting and data acquisition and storage at the teaching hospitals and State Health Laboratories, starting with Royal Perth Hospital. Apart from the use of small dedicated computers for specific technical projects, it was envisaged that use would be made of the main departmental computer of the Health Computing Services. It soon became obvious that the needs of most sections of the various laboratories were broadly similar and a rational plan could be adopted by which a programme adopted in one hospital for a section of pathology could be used by similar sections elsewhere. The association of the State Health Laboratory Services meant that a start could be made on our Patient Master Index, a pre-requisite in further planning. It was also envisaged that Stores Control would be computerised, probably making use of the same concentrator and computer.

ELECTRON MICROSCOPY

This unit continued to function well in association with the University Department of Pathology and was used extensively by Virology and Histopathology.

QUALITY CONTROL

With the imminent introduction of accreditation the participation by all sections in recognised quality control programmes has been undertaken.

A satisfactory standard of results has been achieved throughout with some specialised areas maintaining an above average standard internationally.

Commercially available programmes continue to provide the most economical and convenient means of covering the quality control required and also ensure adjudication by an independent organisation.

Branch laboratory standards have been maintained by the Heads of Division of individual departments, with corrective action being taken by the Principal Technologist.

Difficulty has been encountered in finding suitable programmes for microbiological and histopathological quality control; however, limited internal schemes have been introduced. The department of Microbiology completed a programme from the Royal College of Pathologists of Australia embracing all aspects of the section, Clinical

Biochemistry a programme from the College of American Pathologists, the Department of Haematology two programmes, Radioisotopes three separate programmes, and Toxicology a programme run by St. Bartholomew Hospital, London.

FIRE AND SAFETY

Revision "Fire and Safety" courses run by the Queen Elizabeth II Medical Centre were attended by such staff as were available. A special film relating to fire in a laboratory complex was seen by most of the staff; the existing discussions on the film proved most fruitful.

Asbestos blankets and B.C.F. fire extinguishers were positioned in Histopathology, Biochemistry, Microbiology and Library areas.

A safety hazard existing in Biochemistry (Room G2) was resolved, with the removal of a metal locking bar screwed to the door, and the provision of an asbestos blanket and B.C.F. extinguisher to be positioned at the far side of the room away from the door.

Security was maintained by changing the door lock to an H. & P. D.—exit only type lock.

POST GRADUATE EDUCATION

In-service Courses

An In-service Course was arranged in January for five newly appointed graduates.

An extensive course was prepared including all aspects of the disciplines of haematology, microbiology, biochemistry and histopathology. Visits to Cytology, Serology, Cytogenetics, Radioisotopes and Administration, general training in blood collection, together with fire and safety measures were also arranged.

Microbiology Course

A comprehensive course of lectures and practical classes in microbiology was given to dental therapists at the Dental Health Services, Como. Some 60 students were involved. The course, commencing on 7th June, extended through to 10th August.

Lectures were also given to nurses in various metropolitan non-teaching hospitals.

Royal College of Pathologists of Australia

Practical examinations in General Microbiology were held in the Microbiology Division, State Health Laboratory Services, on the 22nd and 23rd July. Three candidates were involved.

SURVEYS

Special Projects processed all specimens from Community Health medical audits carried out throughout the State. All reports were sent through Special Projects to the requesting doctors and, in most cases, computer and report sheets were also prepared and sent to Community Health Services in Perth, otherwise copies of reports sent to requesting doctors were forwarded. As the medical audits continued progress reports were forwarded weekly.

All surveys carried out in conjunction with the Community Health Services were on people in the lower social economic range and were almost totally restricted to the Aboriginal population.

Excess serum from these surveys is stored at 4°C so further testing can be done if required.

In December of 1977 the State Health Laboratories took part in a health screen of 326 Indo Chinese refugees. Blood, urine and faeces was collected. Tests performed:—

1. F.B.C. including a screen for malarial parasites.
2. Treponemal serology.
3. Examination of faeces for pathogens and parasites.

Surveys carried out in conjunction with Community Health medical audits were:—

	Commenced	Completed	Number of Patients
1. Pippingarra Station	14/2/77	12/3/77	36
2. Wittenoom	16/3/77	26/3/77	55
3. Derby	24/4/77	31/8/77	206
4 Carnarvon	15/6/77	1/7/77	16
5. Northam	7/7/77	28/7/77	28
6. Fitzroy Crossing	4/7/77	29/7/77	890
7. Quairading	3/8/77	18/8/77	39
8. Collie	4/10/77	14/10/77	28
9. Perth Metropolitan	7/6/77	15/10/77	81
10. Looma	3/10/77	25/10/77	238
11. Pandanus Park	21/10/77	26/10/77	33
12. Derby Reserve	5/11/77	30/12/77	140
		Total	1 790

PATHNOTE

Forty-three Pathnotes were distributed during 1977 (Biochemistry 9, Haematology 3, Microbiology 9, General 2, Toxicology 20).

The early issues were basically methodologies, with more general informative notes appearing later in the year. The Enteric Diseases report is now issued on a quarterly basis. Preparatory work is commenced on a laboratory manual, to be completed in mid 1978. This manual will give information on laboratory testing, specimens and expected values.

The distribution of Pathnote has continued throughout the State Health Laboratory Services, with requests for copies now being received from other organisations and individuals. Material for printing has been received from the Director of the Red Cross Blood Transfusion Service.

TOURS AND CONFERENCES

Dr. V. Blackman	Royal College of Pathologists of Australia Annual Conference (own expense).
Dr. J. Carroll	VIth Congress of the European Society of Pathologists in London (Pathologists Education and Travel Trust Fund).
Dr. A. Laden	Royal College of Pathologists of Australia Annual Conference (Pathologists Education and Travel Trust Fund).
Dr. M. Mulcahy, Cytogenetics	North West tour (Departmental expense).
Mr. R. Briggs	A.I.M.T. Scientific Meeting, Hobart (Departmental expense).
Mr. G. R. Hannaford	A.I.M.T. Scientific Meeting, Hobart (Departmental expense).
Mr. G. S. Faulkner	A.I.M.T. Scientific Meeting, Hobart (Own expense).
Miss C. Budd	A.I.M.T. Scientific Meeting, Hobart (Own expense).
Mr. R. Willox	6th International Cytology Conference in Japan (Departmental expense).

COURSES

Mr. R. Willox attended the A.D.P. Training Course 30/6/77 to 1/7/77.

REPORTS BY SECTIONS

CLINICAL MICROBIOLOGY LABORATORY

The number of specimens received and the type of request is little changed from the previous year, 16 339 specimens being handled by three technologists and one laboratory assistant.

Several new methods were introduced during the year, and one of these, gas-liquid chromatography, has greatly facilitated the identification of anaerobic bacteria. The identification of Neisseria gonorrhoeae, too, is much more rapid now as the result of the use of rapid carbohydrate utilisation tests and fluorescent antibody tests.

Among interesting strains of bacteria isolated were Pseudomonas pseudomallei from a diabetic Aboriginal patient with septicaemia, five strains of Corynebacterium diptheriae (all non-toxigenic), Haemophilus influenzae from acute urethritis, and Pasteurella pneumotropica from a dog bite wound.

Papers Published

"A dog bite wound infected with Pasteurella Pneumotropica."
S. Medley (1977)
Med. J. Australia, **2**, 224–225.

"Carriage of non-toxigenic Corynebacterium Diptheriae by Australian Aboriginals."
S. Medley (1977)
Med. J. Australia, **2**, 61.

MYCOBACTERIA LABORATORY

Specimens Received

The total number of 10 518 specimens received by the laboratory was similar to previous years, and the isolation rates and species isolated showed no departure from the normal pattern.

Rifampicin Sensitivity Tests

As a result of developmental work performed in the laboratory, Rifampicin is now included in the drugs used or direct sensitivity testing. Incorporated in Middlebrooks 7H 77 agar at 4·0 μg/ml the results obtained on direct testing were identical with those obtained by the indirect method. This step has been welcomed by doctors on account of its time saving.

Minimal Inhibitory Concentrations

Minimal inhibitory concentrations of some anti-tuberculous drugs against strains of Mycobacterium intracellulare were requested for the first time. Requests were performed on strains from patients with serious disease in a hope of choosing the appropriate anti-tuberculous drugs to guide rational therapy. The results so far have been inconclusive because of the lack of experience in choice of technique. More work will be done in the coming year to improve the techniques in order to establish a framework for the treatment of this group of diseases.

Biochemical Tests

More biochemical tests have been incorporated into the routine identification procedures with improvement in the identification of the species; these tests include utilisation of succinate and glucosamine to help identify the rapidly growing mycobacteria.

Environmental M. kansasii

The species Mycobacterium kansasii is occasionally implicated in human disease in Australia. We now have some 40 strains isolated from abattoir effluents and from farm animals, these isolations from farm animals being strains referred from the Agriculture Department. Comparison of these strains with strains isolated from humans is in progress and should be completed early in 1978.

VENEREAL DISEASES LABORATORY

The total amount of work performed increased somewhat during 1977 as compared with 1976; thus, the total number of specimens for gonorrhoea examinations increased from 31 200 to 33 315 (an increase of around six per cent) and the specimens received for dark ground examinations for Treponema pallida increased from 358 to 430 (an increase of around 18·5 per cent).

The actual percentage of positive specimens, hovewer, declined a little—in the case of gonorrhoeae from 6·5 per cent to 5·3 per cent and in the case of syphilis from 7·9 per cent to 4·9 per cent.

Eight strains of Beta-galactosidase producing strains of Neisseria gonorrhoeae were found. This was found by penicillin resistance and confirmed by the iodometric and chromogenic cephalosporin tests.

MEDICAL MYCOLOGY LABORATORY

After sharp increases in work in previous years, the work load has evened out in the past 12 months. There have been slight increases in areas where considerable expertise and time are required in processing the work, and a decrease in more routine areas. Mycology as a subject is highly labour intensive and cannot be automated.

The same general pattern of infection given in detail in last year's report is still evident. Superficial and cutaneous mycoses continue to comprise the major part of the work in this section. There are no real seasonal variations seen in these infections in Western Australia.

There were three unusual mycoses reported during 1977. We recorded our first case of Systemic Histoplasmosis in a patient who had spent many years in India. Two subcutaneous mycoses rare to W.A. were recorded, one a chronic case of Madura Foot (Mycetoma, Maduromycosis) due to an infection by *Nocardia madurae* and the other a case of Chromblastomycosis in an Aboriginal patient from the North West.

CROSS INFECTION LABORATORY

Surveillance of Hygiene

The unit was involved in the investigation of outbreaks of infection at four hospitals. In one instance there was an outbreak of staphylococcal sepsis among aged and infirm patients in a mental hospital, taking the form of boils in five patients. The type of Staphylococcus aureus responsible, phage type 80/81, was found in the nose of 16 patients and members of staff. A staff carrier was found and the outbreak quickly controlled. At a second hospital 15 patients suffered from post-transfusion thrombophlebitis; the cause was found to be an unidentified chemical irritant in the catheters and the outbreak ceased when an alternative brand was introduced. In addition, regular surveillance was performed at the Hospital Laundry and Linen Service and 166 spore strip tests were performed to monitor the autoclaves in Government hospitals.

Phage Typing of Staphylococcus aureus

A total of 4 010 strains of Staph. aureus were received, coming from all hospitals in Western Australia.

Evaluation of Disinfectants and Antiseptics

A new service introduced was the examination of random batches of antiseptics submitted by the Chief Pharmacist of the Government Stores as part of his programme of quality control. Additionally 16 disinfectants were examined to assess their suitability for hospital use.

Culture Collection

An already large collection was augmented by the addition of 2 094 further strains representing interesting isolates in the Clinical Laboratory, all isolates in the Mycobacterium Laboratory, and 271 strains purchased with the aim of establishing a representative reference collection. Our collection has been catalogued and recorded at the World Data Centre for Micro-organisms in Queensland so that it is accessible by world wide users.

ENTERIC DISEASES LABORATORY

Salmonellosis

A total of 1 054 Salmonella cases were diagnosed or reported to the Enteric Diseases Laboratory during 1977, compared with 818 cases in 1976. The increase of 236 (28·7 per cent) cases over the previous year was caused mainly by the protracted outbreak of S. chester infection in Perth which accounted for 168 cases during the seven months period February–August inclusive. Although extensive field enquiries and laboratory investigations of cases, contacts, foodstuffs and water supplies were undertaken, no exact determination of the source of infection was made. However, a great deal of circumstantial evidence, supported by laboratory findings, threw suspicion on raw pet meat as the source of the outbreak.

Among Vietnamese refugees arriving in Western Australia in 1977, 50 cases of Salmonella infection were diagnosed. There was also an increase in isolations from the Kimberley region brought to light by survey work.

Altogether 66 serotypes were implicated in cases of human infection throughout Western Australia compared with 53 in the previous year. A total of 21 Salmonella serotypes were implicated in 10 or more human cases and these strains comprised 934 (88·5 per cent) of the 1 054 cases notified: S. typhimurium (221), S. chester (215), S. muenchen (55), and S. saint-paul (51) were the major human pathogens. The geographical distribution of Salmonella strains in human infections and in foodstuffs, animals etc. during 1977 is published as a "Pathnote".

Shigella

A total of 502 Shigella cases were diagnosed during 1977 compared with 721 cases in the previous year. With the exception of the Eastern region where cases increased from 36 to 71, a lower incidence of Shigellosis was noted in Perth, and other country areas including the Kimberley region.

The predominant serotypes were Shigella sonnei (167 cases), Shigella flexneri type 2 (156) and Sh. flexneri type 6 (136). These serotypes were common in Perth, Kalgoorlie, Carnarvon, Port Hedland and Kununurra. Sh. flexneri type 6 was predominant in Kununurra. The majority of cases were diagnosed in children aged 1–4 years.

Sh. dysenteriae type 1 (Sh. shiga) was diagnosed in two overseas visitors to Perth.

Parasites

As in previous years the majority of infestations occurred among children in the North of the State, although the metropolitan cases have been heavily weighted by the findings among the Vietnamese refugees entering Western Australia during the year. Amongst 2 439 positive isolations, we find 1 124 of G. lamblia, 555 H. nana, 275 A. duodenale and 254 A. lumbricoides. Six cases of Clonorchis sinensis were found in immigrants. The incidence of scabies and lice reported was low and only sporadic cases of tapeworms and entamoebae were seen.

WATERS AND ENVIRONMENT

Bacteriological monitoring of the environment and particularly water supplies was undertaken routinely, while Salmonella isolations from samples of a wide range of fauna were made in association with ecological studies on Rottnest Island and in mainland recreational centres, especially the Perth wetlands.

FOODS

The microbiological surveillance of foodstuffs on a routine basis and in minor episodes of suspected food poisoning engaged this unit fully throughout the year. In common with laboratories in Victoria and New South Wales, S. bredeney was isolated from infant formula food produced in Victoria. Fortunately, only two infants in Western Australia were proved to have had infection associated with feeding of the incriminated formula, although a number of other cases probably were caused by the feeding of infected foodstuffs.

Other Salmonella importations from interstate were S. adelaide and S. havana, both in batches of casein. However, no case of Salmonellosis was associated with the bacteriological findings.

Publications and Reports

"Shigellosis in Man and Monkeys."
J. B. Iveson (1977)
West Australian Health Surveyor, September 1977, 23.

"Public Health Aspects of Edwardsiella Bacteria in Humans, Animals and Environment in Western Australia."
J. B. Iveson (1977)
West Australian Health Surveyor, September 1977, 27.

"Salmonella and the Rottnest Island Environment."
J. B. Iveson and S. D. Bradshaw (1977)
Report (unpublished), State Health Laboratory Services, Public Health Department W.A., and Department of Zoology, University of W.A.

"Salmonella Infections in Wildlife in Western Australia. A Natural Barometer of Environmental Health."
J. B. Iveson (1977)
Paper (in press) presented at the National Conference of Australian Health Surveyors, Perth, W. A.

MEDIA PREPARATION LABORATORY

Media Category	1975	1976	1977
Poured petri dishes	670 000	800 000	1 381 462
Tubes/bottles of media	880 000	1 345 000	2 867 976
Volume of tubes and bottled media (litres)	24 080	31 800	91 000

Demands for media continued to increase. However, the massive increase from 1·4 million to 2·9 million tubes and bottles of media was exaggerated by the inclusion for the first time of media prepared for the Waters Laboratory.

The section continued to supply a wide range of media to all State Health Laboratories, and also to the University Department of Microbiology and King Edward Memorial Hospital; specialist media was also supplied to Royal Perth, Princess Margaret, Fremantle and St. John of God Hospitals, and also the Department of Agriculture.

Rationalisation of methods has started to produce a fall in media usage. In particular, the necessity for culture of urine apart from a "dipstick" now is decided by primary assessment of the urine itself.

VIRUS LABORATORY

The work of the Virus Laboratory during 1977 continued to increase with a total of 41 519 specimens examined. The seasonal variations of the virus diseases encountered during the year are illustrated in the accompanying histograms. From these, two groups of viral infection which were of special interest are instanced in more detail.

The first of these was Herpesvirus infection; these cases have been broken down into type 1 and type 2 and the overall figures for the year were 108 type 1 and 308 type 2 infections. The type 2 infections are a considerable increase over the previous year and reflect not only the situation in Western Australia but mirror a world increase in type 2 genital infections.

The adenovirus infections recorded over the year were of interest in that types 1, 2 and 3 were associated with lymphadenitis and respiratory infections. However, the adenovirus of particular interest was type 19 which was isolated from many cases of conjunctivitis as well as from genital swabs from cases attending the Special Treatment Clinic.

The year was noteworthy for the late arrival and minor extent of the Influenza A epidemic.

During the latter part of the year an extensive outbreak of hand, foot and mouth disease occurred throughout the metropolitan area in young children. Coxsackie A16 was isolated from a number of cases from whom specimens were received.

The TORCH programme, initiated by Professor Nahmias, has been completed as far as the collection of specimens is concerned and the laboratory work should be completed half way through 1978. The object of this research was to study 500 pregnancies with a view to associating any congenital defects, due to intra-uterine virus infections.

The major new development has been the introduction of the ELISA (enzyme linked immunosorbent assay) test for the diagnosis of certain virus infections by estimation of specific IgM.

CLINICAL BIOCHEMISTRY

The combined Clinical Biochemistry Service processed 96 000 samples in 1977 (92 000 in 1976). While new techniques were introduced, a number of outmoded tests (transketolase, leucocyte ascorbic acid, bromsulphthalein and protein bound hexose) were discarded. A new high performance liquid chromatograph and a discrete sample analyser (ABA 100) were brought into service. Registrar for the year was Dr. R. Russell; Mr. Rossi was promoted to supervising the manual side of the laboratory. Dr. Dick took long service leave during the year.

Computerisation

The installation of a new computer (PDP 11/34) and the on-line reporting of all results from the automated laboratory is now complete. The computer reporting of the manual section is well advanced.

Twenty-four-hour Service

A 24-hour service is now available seven days a week with the introduction of a rostered night and weekend staff. This has an added advantage in that country and metropolitan samples arriving late in the afternoon can be analysed during the night and reported next morning.

Radioisotopes Unit

Close association with the work of the unit was made formal late in the year when it was incorporated into the structure of the Clinical Biochemistry service. A number of new radioimmuno assays were started—thyroxine, F.S.H., L.H.,—and a programme of rationalisation of thyroid function tests introduced.

Teaching

The eight students in the first course successfully completed the requirements for the Master of Science degree. Mr. Rumble gained his M.A.A.C.B. and Dr. Garcia-Webb his F.A.A.C.B.

Research

Studies on C-peptide and diabetes, porphyrins, calcium metabolism and catecholamine metabolites continued. The laboratory played a part in a survey of Busselton children and in surveys carried out by Community Health Services.

Conferences and Visits

Dr. Dick attended courses in the U.K., Dr. Garcia-Webb took part in a course for teachers of biochemistry in Pakistan and Professor Curnow was chairman of a meeting in Warsaw of the I.U.P.A.C. and I.F.C.C. Committee on Education in Clinical Chemistry.

Visitors

Distinguished visitors to the department were:—

Dr. K. E. Logan, Ottawa.
Professor V. Marks, Surrey.
Dr. A. G. Gornall, Toronto.

Publications

"Clinical Biochemistry at the Pregraduate Level—Scope and Programmes."
D. H. Curnow.
Biochemical Education, **5**, 10 (1977)

"Analysis of Glucocorticoid Metabolites in the Neonatal Period: Catabolism of Cortisone Acetate by an Infant with 21-Hydroxylase Deficiency."
N. F. Taylor, D. H. Curnow and C. H. L. Shackleton.
Clin. Chim. Acta (in the press).

"Illegal Drugs and Nutrition in Undergraduate Students."
R. E. Davis, N. Midalia and D. H. Curnow.
M.H.A. (in the press).

"The Detection of Porphyria in Photosensitive Patients."
E. Rossi, D. H. Curnow and H. Schenberg.
Pathology (in the press).

"An Improved Screening Method for 3-Methoxy-4-Hydroxy Mandelic Acid Excretion in Urine."
B. A. Rumble and M. Dick.
Pathology (in the press).

"Towards Unified Analyses in Chemical Pathology."
P. Garcia-Webb.
Pathology (in the press).

TOXICOLOGY LABORATORY

The number of specimens received has again increased during the year, for a total of 10 923 specimens were received for analysis compared to 9 780 in 1976.

The staff situation remained constant, although the range and complexity of drug analyses has increased markedly.

The purchase of an EMIT system and a high pressure liquid chromatograph has helped the section to provide a same-day service for a number of drug requests. In November, the section participated in a monthly quality control programme for the measurement of antiepileptic drugs in serum organised by St. Bartholomew's Hospital Medical College, London, with satisfactory results. The amount of forensic work done has been restricted as the clinical cases increase.

The section has averaged 25 hours per week after hours emergency call out for overdose drug screening and drug monitoring analyses. Of the 575 drug screens performed, only in 117 were there no detectable drugs.

During the year ten lectures were presented to various groups.

DEPARTMENT OF HAEMATOLOGY

Work Load

Tests carried out totalled 196 129 and samples received totalled 71 516, increases of 13 per cent and five per cent respectively when compared with the 1976 figures. Sixty-nine per cent of the samples were derived from the Queen Elizabeth II Medical Centre and 30 per cent from the State Health Laboratory Services. Within the department, the work load of the various sections was as follows:—

Routine	54%
Blood Bank and Serology	32%
Coagulation	9%
Special Investigations and Isotopes	5%

Staffing

The staffing establishment remained unchanged during 1977 (20 Medical Technologists and Laboratory Assistants and 4 others), but over the year there was a gradual reduction in the University establishment with the transfer of University employees to the Hospital establishment.

New Methods

In December, the department took over the vitamin B12 and folate assays from the State Health Laboratory Services' Isotopes Laboratory. Other new tests included serum ferritin, globin chain synthesis studies, factor VIII related antigen, detailed red cell enzyme and other genotyping for paternity studies.

Registrars

Dr. Damian Hope was successful in the General Haematology examination for the F.R.C.P.A.

The Future

Planning has continued for the Haematology In-Patient Unit in the new Sir Charles Gairdner Hospital Tower Block (G Block) and has been completed for the proposed new Haematology Department in the Public Health North Block.

HISTOPATHOLOGY AND CYTOLOGY

The section has had an increase in work load of 11·4 per cent surgical biopsies and 28·7 per cent frozen sections. This moderate increase, compared to the previous year, has been handled in a satisfactory manner by all members of the staff. An extra Pathologist was an assistance in the professional sphere. Co-ordination with the University Department of Pathology and the Sir Charles Gairdner Department of Pathology with regard to sharing of Registrars was very successful. It is hoped that this co-operation in providing a wider and comprehensive exposure of surgical pathology to Registrars will be a permanent feature of the three departments.

Dr. J. Pollard, Dr. V. Caruso, Dr. R. Glancy and Dr. G. Sterret, Registrars from the Sir Charles Gairdner Hospital, were involved in examination of surgical biopsies.

The technical and clerical staff have maintained their high standards of efficiency and competency. Whilst there were no increases in staff members, the positioning of cryostats at various hospitals and the automatic staining machine has allowed the existing staff to cope with the work load. The position of Technologist in Electron Microscopy was filled by Mr. Brian MacKenzie. Close association and guidance by Associate Professor J. Papadimitriou of the University Department of Pathology has ensured the success and usefulness of this position.

CYTOLOGY

This section had an increase of 20·8 per cent with a decrease of one staff member. However, Mrs. J. Sparkes completed training and qualified as a cytotechnician during the year. There has been a general re-organisation of the method of reporting by the cytotechnicians which has led to greater efficiency, so that the extra work has not caused any great problem. Further development with regard to computerisation of records is continuing.

FORENSIC SERVICES

Forensic Pathology

There was an increase of 13 per cent in the necropsy component of the work load undertaken by the Forensic Pathologists and a 23 per cent increase in the number of histological slides emanating from forensic post mortems during the year.

The teaching of under-graduate and post-graduate medical students, members of the Police Force and para-medical personnel has continued. The commitment to this aspect has greatly increased due to the advent of the second year students from the course leading to certification in mortuary techniques. In addition, the Royal College of Pathologists of Australia has increased the formal requirements in forensic pathology for the candidates in morbid anatomy and histopathology seeking admittance to Fellowship of the College. There has also been a welcome resurgence of interest from the undergraduate medical students in demonstrations in morbid anatomy.

Dr. Pearson, the Police Surgeon, withdrew from performance of forensic necropsies in the early part of 1977 and much of the work formerly done by Dr. Pearson has devolved upon Dr. Laurie.

There have been no changes in the medical staff during the year. Miss Janes has been a welcome addition to the staff in the Mortuary. On the secretarial side, Mrs. O'Sullivan replaced Mrs. Scott. In common with other sections of the Laboratory service we have suffered from a shortage of typing and clerical help which has caused delays in the reporting of cases.

Dr. Derek Pocock attended the Bi-ennial Symposium of the Forensic Science Society of Australia in Melbourne and delivered a paper on the "Survival of Spermatozoa Under Adverse Conditions". His participation at this conference was at his own expense.

An insidious increase in the number of young persons dying from causes associated with the illicit consumption of proscribed and, in some cases, prescribed drugs is a source of concern. The determination of post mortem drug levels within the tissues of these persons should provide valuable data source for our colleagues in Pharmacology and Toxicology.

Forensic Biology

There was a decrease in the number of items received from the Criminal Investigation Branch of the Police Department compared with 1976. The most significant drop occurred in the crimes of violence not related to sexual activity.

The range of groups identified in bloodstains was extended with the introduction of a manual technique to identify the Rhesus groups. This section now identifies groups in five systems with the most common combination of groups occurring in only one per cent of the population.

During the year, lecture/demonstrations were held for a number of Detective and Police training groups, and a display was prepared for the Royal College of Pathologists of Australia.

There were no staff changes for the year.

SEROLOGY LABORATORY

The year 1977 saw Dr. R. L. Dawkins appointed consultant Immunologist to the Serology Laboratory of the State Health Laboratory Services. With it came a rationalisation of some of the tests done by Sir Charles Gairdner Hospital's Immunology and State Health Laboratory Services' Serology. Anti-nuclear factor assays were sent to Immunology, whilst all rheumatoid factor assays, tetanus toxoid antibody assays, Salmonella antibody assays and carcino embryonic antigen assays were done in Serology.

As in previous years the work is still increasing. Over 5 000 more specimens were received and processed by Serology in 1977 compared with 1976 (this is predominantly made up of over 3 000 extra S.T.S. specimens).

The staff in Serology has remained relatively static.

CYTOGENETICS LABORATORY

Work Load

One thousand three hundred and seventy-two specimens were referred for cytogenetic analysis. Whilst this represents a numeric increase in work load, the true nature of the increase is best demonstrated by the 50 per cent rise in the amount of prenatal diagnostic work. For the current year ending 31st December 1977, 306 pregnancies were monitored compared with 233 in the previous year.

Detection of house dust mites was undertaken in 33 cases of cot death.

New Techniques

The Giemsa banding technique is now applied to all prenatal diagnostic specimens and to most clinical referrals. This has resulted in a large increase in the work required of the technologists; automation of such areas as glassware washing must be done.

Teaching

As in previous years lectures and demonstrations have continued to medical students, post-graduate nurses, post-graduate education students and high school students. Doctors from Community Health and the School Medical Service have also visited the laboratory.

Developmental Projects Under Consideration

1. Routine cytogenetic studies to be performed on all cases of neonatal death and stillbirth.
2. *Haematological cytogenetics*

   Over the past year, two or three patients have been referred by the Department of Haematology for cytogenetic investigation.
3. *Investigation of infertility*

   Towards the end of 1977 we have had several referrals from the newly established Infertility Clinic at the Queen Elizabeth II Medical Centre. This clinic sees on average four new patients per week and the routine cytogenetic investigation of most of these patients is envisaged.

Travel

Ms J. Granger, staff technologist, visited several overseas laboratories during her period of leave.

Dr. M. Mulcahy visited some of the branches of the State Health Laboratory Services in the North-West of the State.

Publications

"Prenatal Diagnosis."
The Western Australian Faculty Bulletin of the Royal Australian College of General Practitioners, June 1977.

"The 11q- Syndrome: Another Case Report."
Human Genetics, Vol. 36, 1977.

"45,X/47,XYY Mosaicism."
Journal of Medical Genetics, Vol. 14, 1977.

RADIOISOTOPES LABORATORY

The year 1977 saw an increase of 26·98 per cent total specimens received compared to 1976.

At the beginning of December 1977 the Radioisotopes Laboratory came under the control of Biochemistry headed by Professor D. Curnow. The Senior Technologist, Mr. D. Taylor, transferred to the Serology Laboratory and Mr. F. Watson was appointed Senior Technologist in Charge.

Rationalisation of the work carried out by Radioisotopes resulted in Haematology assuming responsibility for Vitamin B_{12} and folate assays, whilst RI assays performed by Biochemistry staff will be included in duties performed by this unit. They include HGH, FSH, Renin, Aldosterone, LH, Testosterone, and Cortisol assays.

The unit commenced Prolactin assays in March and these are performed biweekly.

Oestriols are now assayed daily—previously done twice weekly.

Thyroxine assays are now completed within 24 hours compared to 48–60 hours with the previous method.

DIVISION OF CLINICAL PHOTOGRAPHY

The division continued to supply a service in clinical photography, art work and other associated work in diagnostic, records and teaching in medicine for all hospitals other than Royal Perth Hospital. The Public Health Department, Medical Department and associated departments continued to be serviced by this division.

Work and output continued to increase and a total of 27 952 transparencies, 10 996 prints and 258 pieces of art work were produced. Other work undertaken included processing for other hospitals, cine filming and video taping. Video taping is currently undertaken on a very restricted basis due to limited facilities and equipment and staff. The role and application of medical television, the location of a central service has been the subject of a number of reports to the Medical Department.

On the 1st July a system of charging for photographic and associated services was introduced based on a unit charging system and to December 31st, 1977, a total of 20 113 units were charged at a cost of $1.00 per unit. The costing tables will be reviewed after one year.

ANIMAL BREEDING AND ANIMAL HOLDING

Because of lack of progress with the State Animal Breeding Centre, it became necessary to revive our own breeding unit at Shenton Park. This commenced operation in February 1977 using breeding stock from the Department of Agriculture and the laboratories are now self sufficient in smaller mammal supply—rabbits, guinea pigs, mice etc.

The animal holding unit in the South Block continued operation satisfactorily. During the year 13 144 suckling mice were bred for virological diagnosis and 5 698 other animals used for diagnosis of disease. The horse paddocks were overhauled; new boundary fences were installed and feed conditions improved chiefly by reticulating some areas. Blood collected for media making etc. totalled 970 litres during the year. The use of the incinerator in the animal house causes some disturbance at the neighbouring hospital building site and consequently much of the animal bedding material has to be bagged and disposed of by contractors.

A small colony of echidnas is being established for help in the diagnosis of Hansen's disease.

TABLE I.A

STATE HEALTH CENTRAL LABORATORIES (INCLUDING COMBINED UNITS)
SPECIMENS ANALYSED AND AUTOPSIES PERFORMED

	1976	1977	% Increase
Clinical Bacteriology	17 421	16 339	—6·21
Virology	36 316	41 519	14·33
Mycology	23 220	22 283	—4·04
Mycobacteria	9 376	10 422	11·16
Venereal Disease	31 558	34 177	8·30
Enteric + Parasitology	24 507	39 330	60·48
Foods	3 696	3 209	—13·18
Waters and Sewerage	18 793	18 758	—0·19
Total Microbiology	164 887	186 037	12·83
Biochemistry	92 476	96 279	4·11
Toxicology	9 780	10 923	11·69
Radioisotopes	20 896	26 534	26·98
Haematology	68 313	71 516	4·69
Serology	63 673	69 506	9·16
Histopathology	18 339	20 436	11·43
Cytology	17 553	21 207	20·82
Autopsies	1 294	1 357	4·87
Total	457 211	503 795	10·19

TABLE IB
WORK DONE BY BRANCH LABORATORIES 1977

Branch Laboratory	1976	1977	% Increase
Albany	9 982	11 809	18·30
Armadale/Kelmscott	1 138	4 069	257·56
Broome	3 359	4 156	23·73
Bentley	9 202	7 434	—19·21
Bunbury	15 443	17 479	13·18
Busselton	8 036	7 419	—7·68
Carnarvon	9 329	9 734	4·34
Collie	916	553	—39·63
Dampier	10 305	12 320	19·55
Derby	10 460	12 999	24·27
Esperance	5 481	6 882	25·56
Geraldton	20 015	21 144	5·64
Katanning	1 279	3 422	167·55
Kununurra	239	370	54·81
Manjimup	8 555	8 266	—3·38
Merredin	7 842	7 692	—1·91
Mount	4 030	3 677	—8·76
Narrogin	11 447	11 770	2·82
Newman	89	811	811·24
Northam	8 993	10 698	18·96
Osborne Park	10 346	16 286	57·41
Pinjarra	8 770	10 801	23·16
Rockingham	3 321	7 942	139·14
Port Hedland	17 071	19 210	12·53
Swan Districts	12 332	14 638	18·70
Tom Price	62	1 035	1 569·35
Wyndham	7 847	8 596	9·55
Totals	205 889	241 212	17·16

TABLE IIA
CLINICAL BACTERIOLOGY SPECIMENS 1977

	No. of Specimens
Medical Practitioners	2 288
Country Hospitals	3 432
Metropolitan Hopsitals	1 149
Mental Health Services	911
Department of Corrections	1 018
Family Planning Association and Womens' Health Centre	6 871
Aboriginal Medical Service	484
Reference Cultures	186
Total	16 339

TABLE IIB
V.D. CLINIC 1977

	Total	No. Positive	% Positive
Specimens for Gonorrhoea	33 315	1 771	5·32
Specimens for Syphilis (Dark Ground Illumination)	430	21	4·88
Other	432	....	....
Total	34 177	1 792	5·24

TABLE IIC
ENTERIC DISEASES LABORATORY
WATERS AND SEWERAGE—SPECIMENS 1977

Specimens	State	Commonwealth	Local Health Authority	M.W.S.S.D.	Other	Total
Drinking Water	2 107	1 247	1 712	6 437	86	11 589
Natural Waters	2 743	6	996	2 252	43	6 040
Sewage/Effluent	63	30	147	558	32	830
Swimming Pools	20	....	272	1	6	299
Total	4 933	1 283	3 127	9 248	167	18 758

TABLE IID

ENTERIC DISEASES LABORATORY PUBLIC HEALTH BACTERIOLOGY—SPECIMENS EXAMINED FOR PATHOGENS 1977

Specimens	State	Commonwealth	Local Health Authority	M.W.S.S.D.	Other	Total	No. Positive for Pathogens	% Positive
Human	12 702	278	1 197	Nil	1 142	15 319	1 557	10·16
Animal	2 567	12	40	14	29	2 662	457	17·17
Water/Effluent	3 622	99	1 695	1 488	21	6 925	1 215	17·55
Cultures Referred	887	114	Nil	Nil	62	1 063	742	69·80
Phage Typing	662	Nil	Nil	Nil	Nil	662	662	100·00
Total	20 440	503	2 932	1 502	1 254	26 631	4 633	17·40

TABLE IIE

ENTERIC DISEASES LABORATORY FOODS—SPECIMENS 1977

	State	Commonwealth	Local Health Authority	Total	No. Positive for Pathogens	% Positive
Specimens	2 069	307	833	3 209	429	13·37

TABLE IIF

ENTERIC DISEASES LABORATORY PARASITOLOGY—SPECIMENS 1977

No. of Specimens	No. Positive	%Positive
12 699	2 439	19·21

TABLE IIG

MYCOBACTERIA—SPECIMENS 1977

	Perth Medical Clinic	Chest Clinic	Repatriation and Kalgoorlie	Others	Smears for M. leprae	Total	Total Positive	% Positive
No. of specimens	2 990	1 351	1 168	4 124	789	10 422	Mycobacteria Atypical 553 M. Tuberculosis .... 395 Total 948	9·1

TABLE IIH

MYCOLOGY—SPECIMENS 1977

Total Specimens	Total Positive	% Positive
22 283	5 556	24·93

Skin Scrapings	Scrapings Referred	Collected by Staff
6 946	2 521	4 425

TABLE II.I.
VIRUS LABORATORY—SPECIMENS 1977

Specimens for Isolation	15 477	
Positive Isolations	1 916	(12·4%)
Specimens for Rubella	14 202	
Specimens—General Serology	4 543	
Positive Serology	430	(9·5%)
Sera for Hepatitis	2 753	
Positive Hepatitis	579	(21·0%)
Surveys etc.	4 544	
Total	41 519	

TABLE III
CLINICAL BIOCHEMISTRY—SPECIMENS EXAMINED 1977

	1976	1977	% Increase
Sir Charles Gairdner Hospital	57 984	56 207	—3·06
State Health Laboratory Services	31 163	36 549	17·28
Commonwealth Instrumentalities	814	460	—43·49
Surveys etc.	2 515	3 063	21·79
Total	92 476	96 279	4·11

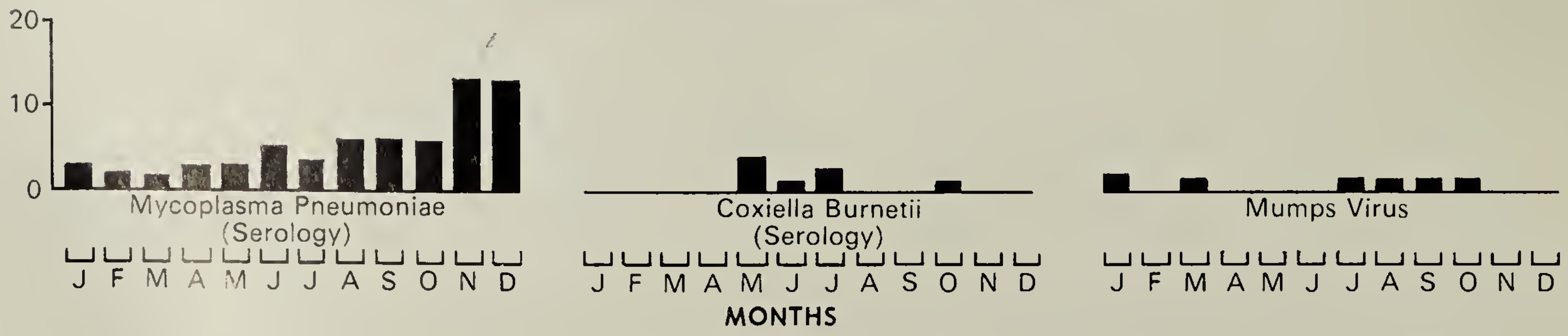
TABLE IV
TOXICOLOGY SECTION—SPECIMENS 1977

	1976	1977	% Increase
CLINICAL—			
Drugs	7 723	9 329	20·80
Alcohol	127	394	210·24
Pesticides	385	415	7·79
Miscellaneous	322	....	—100·00
FORENSIC—			
Drugs	488	327	—32·99
Alcohol	735	458	—37·69
Total	9 780	10 923	11·69

TABLE V
HAEMATOLOGY—SAMPLES ANALYSED 1977

	1976	1977	% Increase
Sir Charles Gairdner Hospital	46 632	49 687	6·55
State Health Laboratory Services	15 653	17 695	13·05
Commonwealth etc. and University	1 221	528	—56·76
State Surveys	4 807	3 606	—24·98
Total	68 313	71 516	4·69

SEASONAL DISTRIBUTION OF VIRUS AND VIRUS-LIKE INFECTIONS DIAGNOSED IN VIRUS LABORATORY, 1977 - (1)



SEASONAL DISTRIBUTION OF VIRUS AND VIRUS-LIKE INFECTIONS DIAGNOSED IN VIRUS LABORATORY, 1977 - (2)

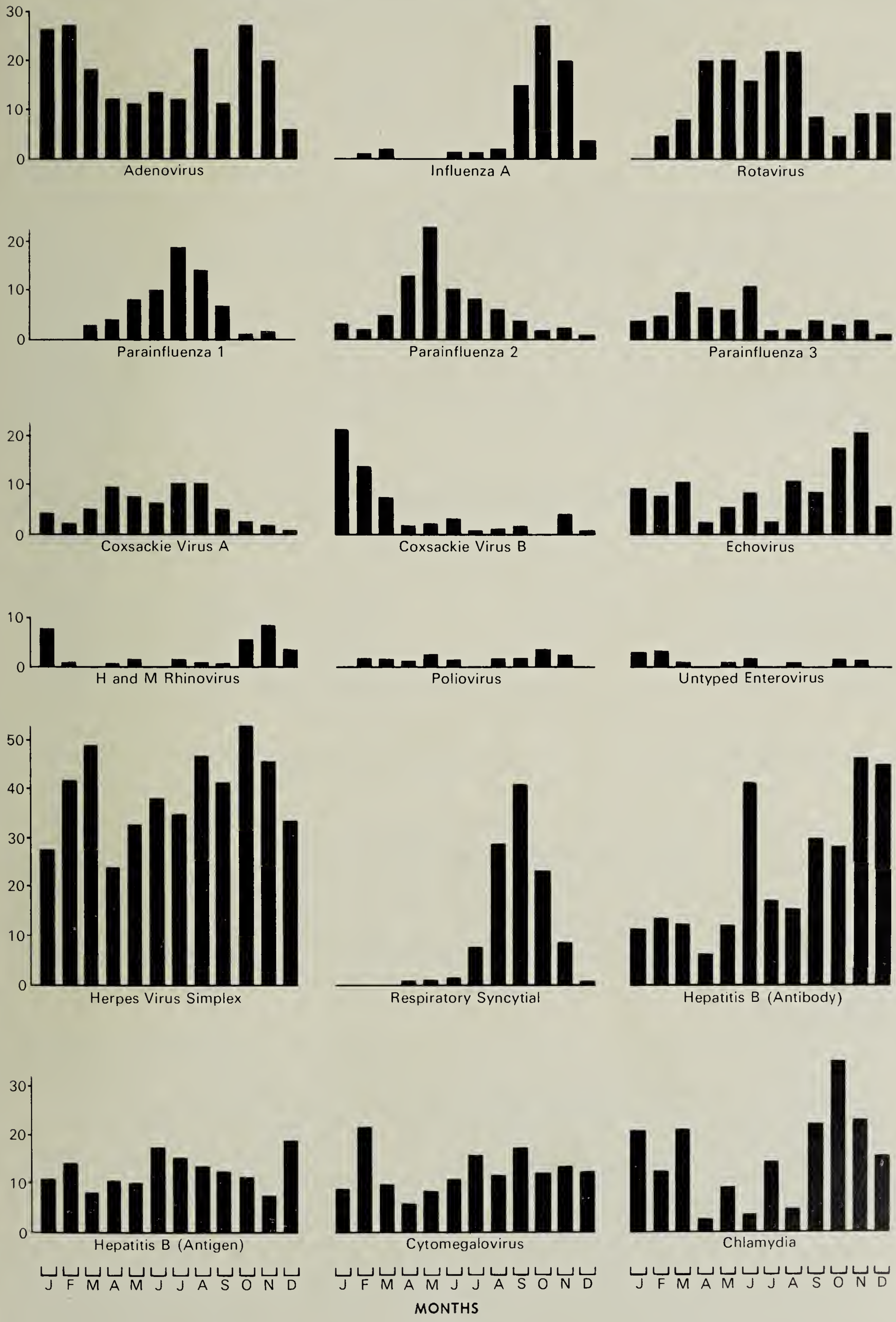


TABLE VIA

HISTOPATHOLOGY AND MORBID ANATOMY—WORK DONE 1977

	1976 Total	1977 Total	% Increase
Autopsies—Forensic	1 294	1 357	4·9
Surgical Biopsies	18 339	20 436	11·4
Blocks Cut—Autopsies	18 228	22 407	22·9
Blocks Cut—Biopsies	37 479	39 242	4·7
Frozen Sections—Biopsies	382	492	28·8

TABLE VIB

CYTOLOGY—SPECIMENS 1977

	1976	1977	% Increase
Lung Cases	781	719	—7·9
Cervical Cases	16 536	20 177	22·0
Miscellaneous	236	311	31·8
Total	17 553	21 207	20·8

TABLE VII

SEROLOGY AND CYTOGENETICS—SPECIMENS 1977

	1976	1977	% Increase
Treponemal Serology	40 029	43 424	8·48
Bacterial Serology	7 628	9 283	21·70
Viral, Rickettsial, Helminthic and Protozoal Serology	6 721	6 230	—7·31
Serology Hormones	828	920	11·11
*Medico-legal Serology (Cases)	....	200*	0·00
Chromosome Analysis	1 135	1 372	20·88
Tissue Antibody Serology	907	1 050	15·77
Others	6 425	7 027	9·37
Total	63 673	69 506	9·16

* Included in "Others" last year. Number of Alcohol Kits prepared—1 600.

TABLE VIII

RADIOISOTYPES—SPECIMENS 1977

	1976	1977	% Increase
Thyroid Function Tests	10 098	12 136	20·18
B12 and Folate (to Nov. 30, 1977 plus Surveys)	5 538	6 343	14·54
H.C.S. and Estriol	967	1 267	31·02
Digoxin	1 052	991	—5·80
Insulin	177	786	344·07
Prolactin (from 19.05)	....	193	....
Australia Antibodies and Antigen	3 064	4 818	57·25
Total	20 896	26 534	26·98

Appendix II

Chest and Tuberculosis Services

K. J. M. Carruthers

J.P., M.D., B.S., M.R.C.S., L.R.C.P., D.P.H., F.C.C.P., F.A.C.M.A., A.K.C.

Director

This report covers the first year of operation of the Chest and Tuberculosis Services Branch after the termination of the Commonwealth/State Tuberculosis Agreement. Although major emphasis is placed on the control of tuberculosis at the general Chest Clinics at Perth, Fremantle and Kalgoorlie, respiratory diseases of all types are handled, especially patients with chronic respiratory disorders. Each of the four full time physicians on the staff of the Branch is also a member of the clinical staff of the Sir Charles Gairdner Hospital and two hold a similar position at Royal Perth Hospital. Each physician conducts a weekly out-patient session in respiratory medicine at the Sir Charles Gairdner Hospital and one also has an out-patient session at Royal Perth Hospital. Officers of the Branch are available in a consultant capacity to the other teaching hospitals, and the Branch maintains a regular chest service at Graylands and Swanbourne Hospitals.

Dr. R. M. Porter retired from the Directorship on 14/10/77 having worked in the Branch since 1/5/58. Dr. J. T. Cassidy joined the staff as a Chest Physician on 27/7/77.

The Chest Clinic attendances for 1977 were as follows:—

Perth Chest Clinic	11 068
Fremantle Chest Clinic	2 027
Kalgoorlie Chest Clinic	85
Examinations at Graylands Hospital....	966
Domiciliary assessments (including portable chest x-ray)	29
Total	14 175

Total attendances have not changed significantly over the past six years.

Visiting sisters of the Branch carried out a total of 4 000 home visits during the year. Two thousand two hundred and ninety-four of these were in connection with the supervision of anti-tuberculosis drug therapy. Seven hundred and eighty-eight related to patients on the tuberculosis register but who are not currently on drug treatment and 1 031 to patients with non-tuberculous chest disorders. The Clinic Sisters were responsible for 1 912 contact examinations.

TUBERCULOSIS

Notifications

There were 139 new cases of tuberculosis in the State (a rate of 11·8 per 100 000), eight transferred in from other States and eight whose previous tuberculosis reactivated making a total of 155 notifications in all. This represents a further and slightly larger peak in an otherwise general downwards trend. A similar peak occurred in 1972 when the same number of cases was notified.

In 1977 there were 97 new patients (an incidence of 6·5 per 100 000), seven transfers-in from other States and eight reactivations with pulmonary tuberculosis making a total of 112 (incidence 9·5 per 100 000). In 1972 there were 125 cases of pulmonary disease (an incidence of 11·9 per 100 000).

Seventy-six of the 97 new cases of pulmonary tuberculosis and 32 of the 42 non-pulmonary cases were considered to have disease caused by M. tuberculosis although only 45 pulmonary and nine non-pulmonary cases were proven bacteriologically. There were thus 45 new cases demonstrated to be infectious and an additional 31 possibly infectious, although their infectivity would be low-grade. There was a considerable drop in the percentage of advanced cases of pulmonary disease found during the year.

Review of the tuberculosis register at the end of the year showed that there were 110 active pulmonary cases, a prevalence in the State of 9·3 per 100 000.

The male to female ratio was approximately 2:1. Forty-four per cent of the female cases notified and 61 per cent of the male cases were aged 45 years or over. The tendency towards active tuberculosis occurring in older persons was even more marked for the pulmonary cases where 63·6 per cent of females and 67·1 per cent of males were aged 45 years or over.

Non-Pulmonary Tuberculosis

Of the 147 cases of tuberculosis notified (excluding interstate transfers-in) 42 (28·6 per cent) were of non-pulmonary disease. Of these, 52·4 per cent had involvement of lymph glands, four-fifths being in children.

Twenty-one point four per cent had genito-urinary disease and 16·7 per cent involvement of bones and joints. Over the years the sex ratio has varied and in 1977 the male/female ratio was approximately 5:3.

Reactivations

There were eight reactivations, five being in males and three in females. Once again the figures highlight the importance of adequate chemotherapy in that only two of the eight had had such treatment in the past and one of these, whose reactivation was determined only on radiological grounds, was originally a case of atypical tuberculosis. There was thus only one case of disease due to M. tuberculosis who had reactivated and who had adequate chemotherapy previously. Four of the five who had had inadequate drug treatment still had sensitive organisms.

Drug Resistance

During the year six patients were found to have M. tuberculosis resistant to anti-tuberculosis drugs. Four had had no treatment and two inadequate treatment previously. Only one of the six was Australian born, being an Aboriginal male with a strong family history of tuberculosis. The five other patients came from Scotland, Cocos Island, East Timor, Burma and India.

Migrants

Seventy-four (47·7 per cent) of the 155 cases notified in 1977 were non-Australian born. Forty-three (58·1 per cent) of these had lived in Australia for more than five years. The latest census figures available (1971) showed that 27·5 per cent of the West Australian population were non-Australian born. The incidence of tuberculosis in this segment of the population continues to be approximately twice that in the Australian born.

Although many non-Australian born patients had come from the United Kingdom others originated in a wide range of countries. A significant number of new cases of tuberculosis came from Burma or South East Asia and a relative lack of facilities in some of the countries involved raises very real problems in connection with adequacy of previous treatment and the emergence of drug resistant organisms.

Treatment

Anti-tuberculosis drug therapy is the mainstay of modern treatment. Most patients undergoing treatment for the first time are now given a combination of Isoniazid, Rifampicin and Ethambutol, the latter drug usually being stopped after two or three months leaving the patient to continue with the first two.

There is a tendency towards shorter courses of anti-tuberculosis drug therapy and in many cases the duration of treatment has been reduced from 2 years to 18 or even 12 months.

There has also been a steady reduction of the time spent in hospital. Analysis in respect of new tuberculosis patients whose disease was due to M. tuberculosis and who were notified, admitted to the tuberculosis ward of the Sir Charles Gairdner Hospital and discharged during the year shows that 35·6 per cent were in hospital for one month or less, 45·8 per cent for one to three months, 16·9 per cent for four to six months and 1·7 per cent for a longer period. At the end of the year 166 patients were continuing anti-tuberculosis drug treatment at home and a further 20 persons were on prophylactic chemotherapy.

Atypical Tuberculosis

Atypical mycobacteria were recovered for the first time from 134 persons but only 31 of these fullfilled the diagnostic criteria for atypical tuberculosis. This represents an increase in the number of cases of atypical tuberculosis notified, the previous highest figure during the past 10 years being 27 in 1972. In the remaining 103 these organisms were considered to be present merely as secondary invaders without clinical significance. As has been the case in Western Australia during previous years, M. intracellulare was by far the most frequently identified of the atypical mycobacteria. It was the causative organism in 25 of the 31 notified cases (80·6 per cent) and was identified in 58 of the 103 in which atypical mycobacteria were not so considered to be pathogenic (56·3 per cent). One pulmonary case of atypical tuberculosis was considered to be due to M. flavescens, the first time this has been recorded in Western Australia.

There were eight patients with proven atypical mycobacterial adenitis. Of these M. intracellulare were recovered from six and M. scrofulaceum from two. One of the latter was an adult but all the remaining seven cases were children. There were 16 notified as having mycobacterial adenitis. Of these atypical mycobacteria were recovered from seven. In the remaining nine the diagnosis was made on histological grounds, the cultures being negative. In six of the nine comparative Mantoux tests suggested that the infection was due to an atypical mycobacterium, but in three no definite conclusion could be made.

The treatment of atypical tuberculosis is complicated by the fact that almost all atypical mycobacteria are resistant to anti-tuberculosis drugs although some benefit may be obtained by using multiple drug regimes. Surgical excision is carried out where possible and this is particularly successful in the management of atypical mycobacterial lymphadenitis.

Source of Cases

Once again approximately one-third of the cases notified came to light through the activities of general medical services (i.e. private practitioners and general hospitals). There was no significant change in the proportion diagnosed through the work of chest clinics and chest hospitals. A very small proportion continues to be brought to light at post-mortem, an unsatisfactory but apparently unavoidable situation.

Special Surveys

The schools tuberculosis programme by which B.C.G. vaccination is offered to all Year nine students was continued. Two thousand three hundred and sixteen students were vaccinated. Tuberculin tests were carried out using the Heaf technique but Grade I reactions were considered to be non-specific. The reactor rate (Heaf grades II to IV) in 10 to 14-year-olds was 2·3 per cent and in 15 to 19-year-olds 4·0 per cent.

The mass x-ray units were active in the metropolitan area and in the north west. Priority is given to the periodic examination of miners and to selected groups in the population. The latter include men aged 45 years and over, smokers, persons with persisting respiratory symptoms and those who have either had tuberculosis or positive tuberculosis tests (abnormal chest x-ray or tuberculin test) in the past. A total of 16 159 persons were examined. Three were subsequently notified as having active tuberculosis, 16 were suspected of having carcinoma and 355 were found to have other radiological abnormalities. The respective rates were 0·18 per 1 000, examinations 0·99 per 1 000 and 21·97 per 1 000.

Additional surveys were carried out as follows:

South-East-Asian Refugees	274
H.M.A.S. Leeuwin	941
Industrial Rehabilitation Unit (Graylands)	277
Hospitals and frail aged homes	686
F.C.B. Industries (Sheltered Workshop)	85
Total	2 263

Abnormal chest x-ray films taken at non-metropolitan hospitals are passed through Perth Chest Clinic for purposes of recording. Five thousand four hundred and twenty-three of these were received during the year. In addition to this there were 863 films received from country centres in respect of patients under observation for tuberculosis or suspected tuberculosis.

MINES MEDICAL SECTION AND OCCUPATIONAL HEALTH

Chest x-ray examination of new applicants to the industry and periodic re-examination of miners resulted in a total of 12 560 examinations during the year. These were made up as follows:

	New Applicants	Re-Examinations	Total
Perth Chest Clinic....	3 246	1 607	4 853
Kalgoorlie Chest Clinic	879	697	1 576
Mobile Unit	191	5 940	6 131
Total	4 316	8 244	12 560

One hundred and seventy-five persons were examined by the Pneumoconiosis Medical Board, of which the Mines Medical Officer is Chairman. Seventeen Board sessions were held at Perth Chest Clinic and six at Kalgoorlie Chest Clinic. Industrial surveys over and above the routine periodic examination of registered miners were carried out in association with the Occupational Health Division as follows:

Collie miners	775
Humes	191
M.B.P.	126
Hardies	217
Wittenoom population (Special Survey)	146
Chamberlain John Deere (Foundry workers and sand-blasters)	155
Total	1 610

One case of tuberculosis was discovered at Wittenoom.

Two thousand four hundred and fifty non-miners were examined on a voluntary basis by the mines mobile mass x-ray unit, 2 141 of these on its visit to the Pilbara. Two cases of tuberculosis were discovered and notified (a rate of 0·82 per 1 000) and three required further observation. Other voluntary examinations were carried out by the unit at Muja Power Station (124), Alcoa (584) and at "B" and "C" class mines (105).

RESPIRATORY DISEASES PROGRAMME

Special attention is paid to patients with chronic respiratory disorders at the chest clinics. Most of this work is done at Perth Chest Clinic where 19 female patients and 156 male patients were seen during the year, at a total of 331 attendances. The facilities for caring for these patients includes physiotherapy, ventilatory function tests and where necessary home visiting by a specially appointed sister.

Sister Harris was appointed as visiting nurse (asthma) in July, 1977. Her duties include liaison with the Asthma Foundation and attendance at various camps and educational and other activities organised by the Foundation. She plays a major role in re-enforcing advice to patients (and parents) in connection with the management of asthma and is also of great assistance to physicians in the investigation of cases with particular reference to environmental factors. Sister Harris carried out 60 initial and 53 follow-up visits, and attended 31 Asthma Foundation activities.

TABLE 1

TUBERCULOSIS—MAIN STATISTICAL FIGURES

Year	Mean Population 1 000s	Notifications (includes Transfers-in)				No. on Register (Pulm.) at 31st Dec.	No. on Register per 100 000 (Pulm.)	Number Receiving T.B. Allowance at 31st Dec.	Deaths			Death Rate per 100 000	
		Pulm. (incl. Pleural effus.)	Non-Pulm.	Total	Pulm. per 100 000				Pulm.	Non-Pulm.	Total	Pulm.	All Forms
1950	558	586	18	604	104·8	2 100	376	515	125	3	128	22·4	22·9
1951	580	467	37	504	80·4	2 402	413	474	76	6	82	13·1	14·1
1952	601	508	49	557	84·5	2 574	428	396	75	7	82	12·5	13·6
1953	621	378	34	412	60·6	2 762	445	361	43	3	46	6·9	7·4
1954	640	348	34	382	54·3	2 769	432	326	57	4	61	8·9	9·5
1955	659	413	39	452	62·7	2 965	450	330	31	2	33	4·7	5·0
1956	677	424	44	468	62·6	2 900	428	264	43	3	46	6·3	6·8
1957	692	332	32	364	47·9	2 786	403	198	36	1	37	5·2	5·3
1958	706	355	24	379	50·3	2 726	386	213	22	4	26	3·1	3·4
1959	726	320	34	354	44·1	2 684	369	182	24	....	24	3·3	3·3
1960	731	296	34	330	40·5	2 388	327	148	29	1	30	4·0	4·1
1961	737	209	41	250	28·4	1 349	183	89	18	1	19	2·4	2·6
1962	755	243	25	268	32·2	1 333	177	90	24	4	28	3·2	3·7
1963	773	216	28	244	27·9	1 218	158	92	13	....	13	1·7	1·7
1964	790	176	32	208	22·3	1 221	154	88	20	....	20	2·5	2·5
1965	806	153	25	178	19·0	919	114	65	12	....	12	1·5	1·5
1966	836	134	36	170	16·0	840	100	64	16	....	16	1·9	1·9
1967	877	137	34	171	15·6	814	93	54	9	....	9	1·0	1·0
1968	910	145	37	182	15·9	680	75	44	8	1	9	0·9	1·0
1969	947	133	27	160	14·0	659	70	43	8	....	8	0·8	0·8
1970	983	113	35	148	11·5	653	67	32	10	....	10	1·0	1·0
1971	1 029	113	30	143	11·0	625	61	27	17	2	19	1·6	1·8
1972	1 053	125	30	155	11·9	569	54	40	8	....	8	0·8	0·8
1973	1 068	110	36	146	10·3	522	49	15	11	....	11	1·0	1·0
1974	1 090	104	36	140	9·5	480	44	17	8	1	9	0·7	0·8
1975	1 127	102	36	138	9·1	460	41	29	10	2	12	0·9	1·1
1976	1 145	83	27	110	7·3	437	38	13	4	....	4	0·4	0·4
1977	1 183	112	43	155	9·5	424	36	13	7	1	8	0·6	0·7

TABLE 2

CASES OF TUBERCULOSIS NOTIFIED AND NUMBER BACTERIOLOGICALLY PROVEN—1968-1977
(Excludes Inter-State Transfers In, Reactivations and Cases Caused by Atypical Mycobacteria)

Year	Pulmonary	No +ve	Non-Pulmonary	No +ve	Total	Total +ve
1968	104	74	25	12	129	86
1969	90	63	17	6	107	69
1970	75	52	25	10	100	62
1971	89	68	21	9	110	77
1972	100	72	17	8	117	80
1973	92	60	20	15	112	75
1974	80	61	26	17	106	78
1975	77	57	26	16	103	73
1976	64	46	21	11	85	57
1977	76	45	32	9	108	54

TABLE 3

PULMONARY TUBERCULOSIS

Year	Population in 1 000s	Notifications Received	Incidence Rate per 100 000 Population	Deaths Registered	Mortality Rate per 100 000 Population
1911	287	259	90·2	190	66·2
1912	301	429	142·5	220	73·1
1913	313	424	135·5	206	65·8
1914	323	353	109·3	229	70·9
1915	321	336	104·7	233	72·6
1916	313	511	163·5	225	71·9
1917	306	464	151·6	217	70·9
1918	308	432	140·5	245	79·5
1919	320	467	145·9	289	91·6
1920	330	442	139·9	259	78·4
1921	334	424	126·9	277	82·9
1922	341	387	113·8	256	75·1
1923	351	361	102·8	216	61·5
1924	363	381	104·6	228	62·8
1925	373	403	108·4	259	69·4
1926	381	415	108·2	252	66·1
1927	392	409	104·3	231	56·4
1928	408	395	96·8	282	69·1
1929	421	400	95·0	245	53·4
1930	429	569	132·6	218	50·8
1931	432	372	86·1	223	51·6
1932	435	339	77·9	203	46·7
1933	439	295	67·2	207	47·2
1934	442	287	64·9	218	49·3
1935	447	270	60·4	210	47·0
1936	452	338	74·8	193	42·7
1937	457	239	53·0	172	37·6
1938	464	247	53·2	177	38·1
1939	470	202	43·0	179	38·1
1940	473	231	48·8	181	38·3
1941	474	154	32·5	185	39·0
1942	477	113	23·7	175	36·7
1943	477	273	57·3	144	30·2
1944	481	219	45·4	134	27·9
1945	488	271	55·5	149	30·5
1946	493	343	69·6	163	33·1
1947	502	372	74·0	128	25·4
1948	515	325	63·1	157	30·5
1949	533	499	93·6	123	23·1
1950	558	586	104·8	129	23·1

DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST

Year	Population in 1 000s	Notifications Received	Incidence Rate per 100 000 Population	Deaths Registered	Mortality Rate per 100 000 Population
1950	558	586	104·8	125	22·4
1951	580	467	80·4	76	13·1
1952	601	508	84·5	75	12·5
1953	621	378	60·6	43	6·9
1954	640	348	54·3	57	8·9
1955	659	413	62·7	31	4·7
1956	677	424	62·6	43	6·3
1957	692	332	47·9	36	5·2
1958	706	355	50·3	22	3·1
1959	726	320	44·1	24	3·3
1960	731	296	40·5	29	4·0
1961	737	209	28·4	18	2·4
1962	755	243	32·2	24	3·2
1963	773	216	27·9	13	1·7
1964	790	176	22·3	20	2·5
1965	806	153	19·0	12	1·5
1966	836	134	16·0	16	1·9
1967	877	137	15·6	9	1·0
1968	910	145	15·9	8	0·9
1969	947	133	14·0	8	0·8
1970	983	113	11·5	10	1·0
1971	1 029	113	11·0	17	1·6
1972	1 053	125	11·9	8	0·8
1973	1 068	110	10·3	11	1·0
1974	1 090	104	9·5	8	0·7
1975	1 127	102	9·1	10	0·9
1976	1 145	83	7·3	4	0·4
1977	1 183	112	9·5	7	0·6

TABLE 4

ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*

Year	Parenchymal Disease						Pleural Effusion		Total
	Minimal		Moderately Advanced		Advanced				
		%		%		%		%	
1952	122	24·0	275	54·1	101	19·9	10	2·0	508
1953	98	25·9	210	55·5	65	17·2	5	1·4	378
1954	96	27·6	178	51·1	74	21·3	....	....	348
1955	111	26·9	225	54·5	64	15·5	13	3·1	413
1956	127	38·0	217	51·1	72	17·0	8	1·9	424
1957	102	30·7	163	49·1	61	18·4	6	1·8	332
1958	91	25·6	187	52·7	72	20·3	5	1·4	355
1959	103	32·2	151	47·2	55	17·2	11	3·4	320
1960	89	30·1	144	48·6	49	16·6	14	4·7	296
1961	90	43·1	73	34·9	34	16·3	12	5·7	209
1962	117	48·1	84	34·6	36	14·8	6	2·5	243
1963	99	45·8	89	41·2	26	12·0	2	1·0	216
1964	71	40·3	81	46·0	23	13·1	1	0·6	176
1965	75	49·0	60	39·2	17	11·1	1	0·7	153
1966	59	44·0	54	40·3	18	13·4	3	2·2	134
1967	56	40·9	59	43·1	20	14·6	2	1·4	137
1968	71	48·9	59	40·7	11	7·6	4	2·8	145
1969	57	42·9	62	46·6	13	9·8	1	0·7	133
1970	51	45·1	47	41·6	10	8·9	5	4·4	113
1971	42	37·2	52	46·0	17	15·0	2	1·8	113
1972	51	40·8	50	40·0	20	16·0	4	3·2	125
1973	45	40·9	46	41·8	14	12·7	5	4·6	110
1974	36	34·6	48	46·2	13	12·5	7	6·7	104
1975	43	42·2	43	42·2	15	14·7	1	0·9	102
1976	33	39·8	32	38·5	16	19·3	2	2·4	83
1977	47	42·0	54	48·2	9	8·0	2	1·8	112

* Classified according to Diagnostic Standards N.T.A.

TABLE 5

ANALYSIS OF REGISTER AS AT 31st DECEMBER, 1977

A. Pulmonary Tuberculosis (excluding Pleural Effusions)

Activity	Number on Register According to Original Extent of Lesions			Total
	Minimal	Moderate	Advanced	
Active	38	64	8	110
Inactive:				
0–1 years	52	35	21	108
1–2 years	21	39	5	65
2–3 years	21	27	4	52
3–4 years	30	35	11	76
4–5 years	....	1	....	1
5+ years	....	....	....	....
Total	162	201	49	412

B. Pleural Effusion	12
C. Non-Pulmonary Tuberculosis	117
Total All Forms	541

TABLE 6

AGE AND SEX SPECIFIC TUBERCULOSIS NOTIFICATIONS BY FORM AND STAGE OF DISEASE, W.A., 1977

Age Group	Males					Females					Persons					Total
	Pulmonary			Non Pulm.	Pleur. Effus.	Pulmonary			Non Pulm.	Pleur. Effus.	Pulmonary			Non Pulm.	Pleur. Effus.	
	Min.	Mod. Adv.	Adv.			Min.	Mod. Adv.	Adv.			Min.	Mod. Adv.	Adv.			
0–4	....	....	1	8	....	....	....	....	4	....	....	....	1	12	....	13
5–9	....	....	....	1	....	....	....	....	2	....	....	....	....	3	....	3
10–14	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	1
15–19	1	....	....	2	....	1	....	....	....	....	2	....	....	2	....	4
20–24	2	....	....	....	....	1	1	....	1	....	3	1	....	1	....	5
25–29	6	....	....	....	....	....	1	1	3	1	6	1	1	3	1	12
30–34	....	2	....	1	....	3	....	....	2	....	3	2	....	3	....	8
35–39	2	4	1	....	....	2	1	....	....	1	4	5	1	....	1	11
40–44	3	4	....	3	....	1	....	....	1	....	4	4	....	4	....	12
45–49	2	5	....	2	....	1	1	1	1	....	3	6	1	3	....	13
50–54	2	4	....	3	....	....	2	1	....	....	2	6	1	3	....	12
55–59	5	2	1	3	....	1	1	....	1	....	6	3	1	4	....	14
60–64	2	7	1	1	....	2	2	....	1	....	4	9	1	2	....	16
65–69	2	6	1	....	....	1	....	....	....	....	3	6	1	....	....	10
70–74	1	6	1	....	....	1	....	....	....	....	2	6	1	....	....	9
75 and over	2	3	....	2	....	3	2	....	....	....	5	5	....	2	....	12
N/S	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	30	43	6	26	....	17	11	3	17	2	47	54	9	43	2	155

TABLE 7

TUBERCULOSIS BY SITE AND TYPE OF DISEASE (EXCLUDES TRANSFERS-IN), W.A., 1977

Pulmonary				Extrapulmonary			
Diagnosis	No.	% of		Diagnosis	No.	% of	
		Pulmonary Cases	All Cases			Extra-pulmonary Cases	All Cases
Primary	....	....	....	Genito-urinary	9	21·4	6·1
Pleural effusion	1	1·0	0·7	Lymph glands	22	52·4	15·0
Post-Primary—				Bone & Joint	7	16·7	4·8
1. Minimal	46	43·8	31·3	Meninges	....	....	....
2. Mod. Advanced	50	47·6	34·0	Skin	1	2·4	0·7
3. Advanced	8	7·6	5·4	Generalised	1	2·4	0·7
				Peri Anal Sinus	1	2·4	0·7
				Peri Carditis	1	2·4	0·7
Total	105	100	71·4	Total	42	100	28·6

TABLE 8

BACTERIOLOGICALLY PROVEN TUBERCULOSIS CASES NOTIFIED 1968-1977
(Excludes Interstate Transfers—in, and disease caused by Atypical Mycobacteria)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	TOTAL
PULMONARY—											
Primary	1	....	....	....	1	....	1	2	....	....	5
Pleural Effusion	1	1	....	1	1	3	4	1	1	....	13
Post Primary—											
Min.	34	24	26	25	28	20	15	18	17	20	227
Mod.	40	42	24	31	36	30	34	30	19	25	311
Adv.	9	12	9	15	11	13	11	12	11	7	110
	85	79	59	72	77	66	65	63	48	52	666
EXTRA PULMONARY—											
Genito-Urinary	5	6	6	5	7	10	13	10	7	6	75
Lymph Glands	2	....	2	1	....	2	1	3	2	2	15
Bone and Joint	3	1	....	3	1	3	2	3	....	2	18
Meninges	....	1	....	....	....	....	....	....	2	....	3
Generalised	1	1	....	....	....	....	....	....	....	....	2
Abdominal	1	2	3	....	....	....	....	....	....	....	6
Chest Wall	....	....	....	1	1	....	....	....	....	....	2
Empyema	....	....	....	1	....	....	1	1	....	....	3
Mastoiditis	....	....	....	....	....	....	1	....	....	....	1
	12	11	11	11	9	15	18	17	11	10	125
Total	97	90	70	83	86	81	83	80	59	62	791

TABLE 9

T.B. REACTIVATIONS, W.A., 1968-77

Previous Treatment	Number of Reactivations									
	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
(1) No chemotherapy	4	7	2	6	4	3	3	4	3	1
(2) Inadequate chemotherapy—										
Without Surgery	4	11	6	5	3	4	3	7	1	5
With Surgery	1	....	....	....	....	....	1	1	....	....
(3) Apparently adequate chemotherapy	....	2	3	1	1	....	1	1	....	2
Total	9	20	11	12	8	7	8	13	4	8

TABLE 10

T.B. REACTIVATION RATES, W.A., 1968-77

Year	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
No. of reactivations	9	20	11	12	8	7	8	13	4	8
As % of total cases	4·9	12·5	7·4	8·4	5·2	4·8	5·7	9·4	3·7	5·2
Per 100 000 population	1·0	2·1	1·1	1·2	0·8	0·7	0·7	1·2	0·4	0·7

TABLE 11

TUBERCULOSIS INCIDENCE OF MALES BY COUNTRY OF BIRTH, W.A., 1968-77

Country of Birth	Population at June 30, 1971 Thousands (Census)	Incidence Per Thousand Persons										Total Notifi-cations 1968–77
		1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	
U.K. and Republic of Ireland	82·2	0·36	0·33	0·51	0·31	0·23	0·21	0·29	0·12	0·13	0·26	185
Germany	3·6	0·34	0·34	0·34	0·69	0·56	0·56	....	0·28	....	0·56	12
Greece	2·7	0·32	0·32	0·32	....	1·11	0·74	0·74	....	....	0·74	12
Italy	17·1	0·25	0·44	0·37	0·44	0·41	0·29	0·41	0·12	....	0·35	51
Netherlands	6·2	0·17	....	....	0·17	0·16	....	0·16	0·16	....	0·16	7
Poland	2·8	1·78	0·71	....	0·36	1·07	0·36	....	0·36	....	....	13
Yugoslavia	6·2	0·87	2·00	0·65	0·43	0·16	0·16	1·29	0·81	....	0·32	35
Other European	8·6	0·77	1·23	0·92	....	0·05	0·93	0·23	0·23	0·12	0·23	35
Other Birthplaces	23·8	1·52	0·51	1·27	0·93	0·67	0·50	0·55	0·92	0·76	0·59	145
Total non-Australian born	153·2	0·54	0·49	0·55	0·38	0·48	0·31	0·37	0·29	0·20	0·33	495
Australian born	375·9	0·19	0·15	0·12	0·12	0·22	0·12	0·10	0·13	0·09	0·15	457

TABLE 12

TUBERCULOSIS INCIDENCE OF FEMALES BY COUNTRY OF BIRTH, W.A., 1968-77

Country of Birth	Population at June 30, 1971 Thousands (Census)	Incidence Per Thousand Persons										Total Notifi-cations 1968–77
		1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	
U.K. and Republic of Ireland	74·8	0·18	0·12	0·14	0·20	0·16	0·09	0·12	0·12	0·17	0·07	87
Germany	3·5	....	....	0·33	0·33	....	....	....	0·86	....	....	5
Greece	2·3	....	0·43	....	....	0·43	0·87	0·43	0·87	0·43	....	8
Italy	13·4	0·08	0·33	0·08	0·41	0·15	0·15	....	....	0·07	0·07	17
Netherlands	5·0	....	....	....	0·22	....	....	0·20	....	0·20	....	3
Poland	2·0	1·00	2·00	....	1·00	0·50	1·00	0·50	....	0·50	1·00	15
Yugoslavia	3·9	....	....	....	0·34	0·51	0·51	0·26	0·51	0·51	0·51	12
Other European	5·9	0·45	0·68	0·45	....	0·68	0·34	....	0·71	0·34	0·34	18
Other Birthplaces	19·3	0·82	0·51	0·61	1·33	0·47	0·36	0·41	0·47	0·41	0·62	85
Total non-Australian born	130·1	0·24	0·25	0·19	0·37	0·21	0·18	0·16	0·20	0·22	0·18	250
Australian born	371·3	0·12	0·11	0·11	0·09	0·11	0·08	0·07	0·06	0·04	0·07	272

TABLE 13

FIRST ISOLATIONS OF MYCOBACTERIA IN W.A., 1977 (OTHER THAN M. TB)

Type	Isolations not clinically specified	Atypical Tuberculosis			Total All Isolations
		Pulm.	Non-Pulm.	Total	
M. Kansasii	3	2	....	2	5
M. Scrofulaceum	3	1	2	3	6
M. Gordonea	11	....	....	....	11
M. Flavescens	3	1	....	1	4
M. Intracellulare	58	17	8	25	83
M. Avium	1	....	....	....	1
M. Terrae	6	....	....	....	6
M. Fortuitum	4	....	....	....	4
Rapid Growers	7	....	....	....	7
Mixed	6	....	....	....	6
Unidentified	1	....	....	....	1
Total Patients	103	21	10	31	134

TABLE 14

MYCOBACTERIAL DISEASE OF LYMPH NODES IN CHILDREN, W.A., 1970-77

Year	M. Scrofuladeum Identified	M. intra-cellulare Identified	M. TB (Human) Identified	Cultures Negative	Total Cases
1970	3	2	....	5	10
1971	....	3	....	3	6
1972	3	7	....	5	15
1973	6	8	....	1	15
1974	2	5	....	5	12
1975	....	5	....	3	8
1976	....	2	1	2	5
1977	1	6	....	9	16
Total number of children 1961–1977	24	71	2	79	176

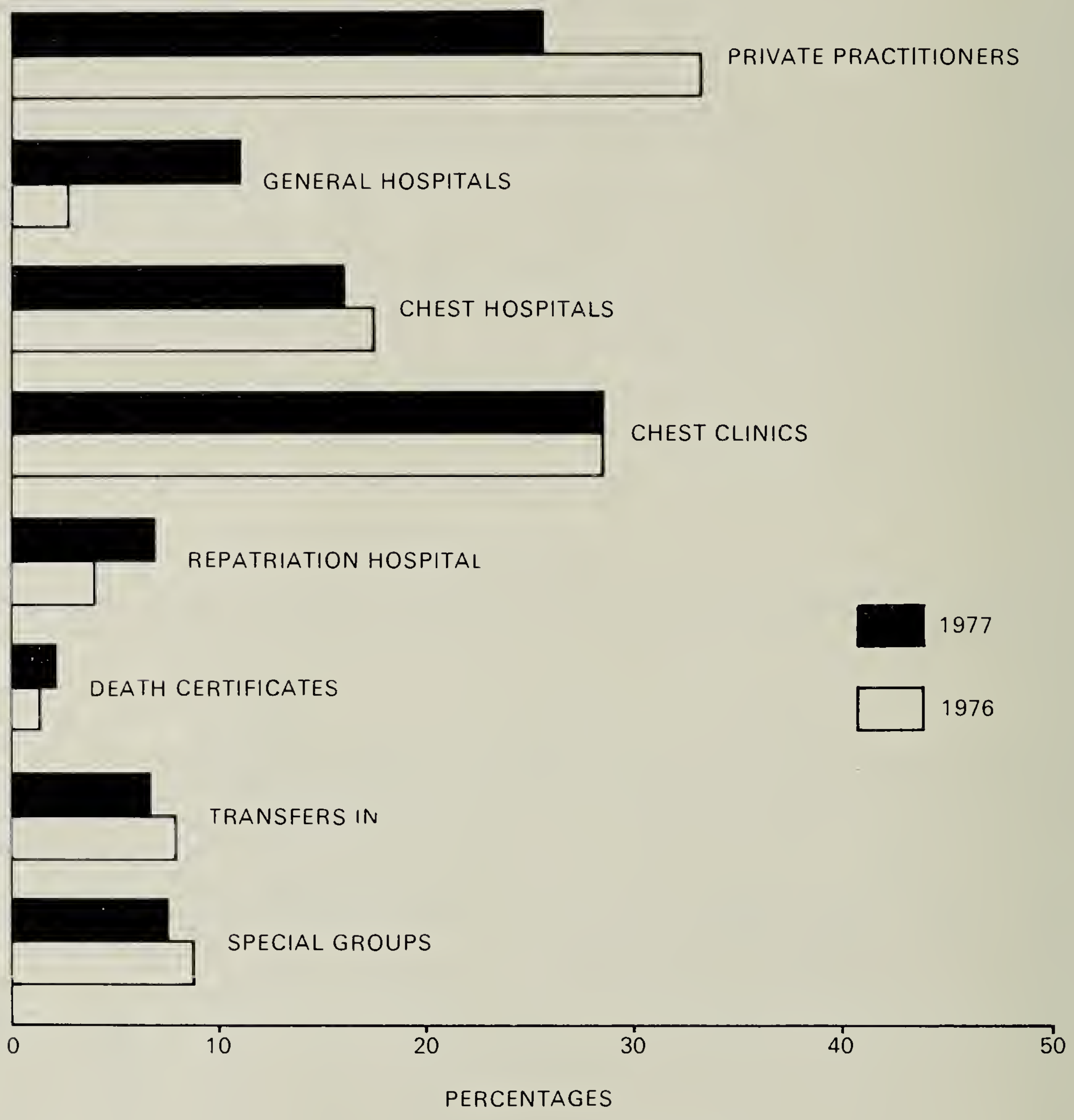
TABLE 15

NOTIFICATIONS OF ATYPICAL TUBERCULOSIS (INCLUDING REACTIVATIONS), W.A., 1970-77

Year	M. kansasii		M. Scrofulaceum				M. Intracellulare				Rapid Growers	
	Pulm.	Other	Pulm.	Lymph Nodes	Other	Total	Pulm.	Lymph Nodes	Other	Total	Pulm.	Lymph Nodes
1970	3	....	2	3	....	5	11	3	....	14	....	....
1971	....	....	1	....	....	1	5	3	....	8	....	....
1972	2	....	1	3	....	4	12	7	1	20	1	....
1973	....	1	....	6	....	6	8	8	....	16	....	1
1974	2	....	....	2	....	2	9	5	....	14	....	....
1975	2	....	....	1	....	1	8	6	1	15	....	....
1976	....	3	....	....	....	....	10	2	....	12	....	....
1977	2	....	1	2	....	3	17	6	2	25	1	....
Total 1955-1977	17	4	31	26	1	58	199	77	4	280	3	1

Plus: Two patients with mixed pulmonary disease (1963 and 1970).

GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS A PERCENTAGE OF TOTAL NOTIFICATIONS



Appendix III

Epidemiology and Special Services

R. Allen, M.B.B.S.
Medical Officer in Charge

Notifiable Diseases

The only major variation in notifications of infectious diseases during 1977 was a considerable increase in the number of reported cases of salmonella infection. This increase (almost 50 per cent over the 1976 figure) was caused by a widespread outbreak of salmonellosis througout the northern metropolitan area during the middle of the year.

Reported cases of infective hepatitis and bacillary dysentery showed a slight decrease over corresponding figures in 1976.

Malaria

Twenty-six cases of malaria were investigated. The disease type and country of origin were as follows:—

		Total
Papua New Guinea	Pl. vivax 7, Pl. falciparum 3	10
Indonesia	Pl. vivax 6.	6
India	Pl. vivax 4. combined vivax + malariae 1.	5
Kenya	Pl. falciparum 2	2
Vietnam	Pl. falciparum 1	1
Iran	Pl. vivax 1	1
South East Asia	Pl. vivax 1	1
		26

Pl. vivax	19
Pl. falciparum	6
Combined Pl. vivax + Pl. malariae	1
	26

Immunisation

The following immunisations were carried out during 1977:—

Sabin Vaccine		52 595
Triple Antigen	15 733	
C. D. T.	7 644	
Tetanus Toxoid	5 442	
Measles	5 010	
Rubella	9 025	
Miscellaneous	126	
Total Injections	43 000	
		43 000
Total Treatments		95 595

The year 1977 was the seventh year of the rubella campaign in secondary schools and the acceptance rate of 78·5 per cent showed a slight increase over preceding years. A total of 55 143 year eight girls have now received Rubella Vaccine since 1971.

A third mobile immunisation clinic has now been built and will be brought into operation early in 1978. This will provide an improved and more regular service for people in country districts.

Appendix IV

Venereal Disease Control Branch

W. A. Newnham, M.B.B.S., Dip. Ven. (Lond.)
Venereologist in Charge

During 1977 the Public Health Department's clinic for the control of sexually transmitted diseases extended it's activities. The number of patient attendances increased, and for the second successive year, the veneral disease notification figures dropped.

Year	Total Patients Attending Clinic	New Male Patients	New Female Patients	Total New Patients	Ratio Male to Female Patients
1971*	5 760	799	235	1 034	3·4:1
1972	10 786	1 615	597	2 212	2·7:1
1973	10 879	1 922	770	2 692	2·7:1
1974	15 119	2 698	1 089	3 787	2·5:1
1975	20 335	3 178	1 411	4 589	2·2:1
1976	28 373	4 069	1 830	5 899	2·2:1
1977	29 435	4 307	1 857	6 164	2·3:1

* Present Clinic re-organised and opened on 8th November, 1971.

The total of new patients in 1977 represents an increase of 4.49 per cent over the 1976 figures.

VENEREAL DISEASE, W.A., 1968-77

Year	Gonorrhoea	Syphilis	Granuloma	Chancroid	Total Venereal Diseases
1968	718	60	1	....	779
1969	817	209	....	2	1 028
1970	1 166	159	3	....	1 328
1971	1 236	254	2	1	1 493
1972	1 467	258	2	1	1 728
1973	1 657	290	2	3	1 952
1974	2 032	436	1	6	2 475
1975	1 977	657	5	9	2 648
1976	1 932	653	1	7	2 593
1977	1 374	280	4	10	1 668

In comparison with 1976, the 1977 figures show a decrease of 35·67 per cent in the total number of notified cases. Figure 1 on the next page illustrates this fact.

The three main conditions are Non Specific Urethritis, Herpes Simplex Virus Type 2 and Genital Warts. The number of patients who attend the clinic for assessment of a possible problem remains at a high figure. Because of these factors the total patient attendances have increased as shown in Figure 2 on page 50. From the time when re-organisation of the clinic was commenced in November, 1971, there has been a five-fold increase in total patient attendance.

More important is that "New Patient" attendances have increased six-fold in this period of time.

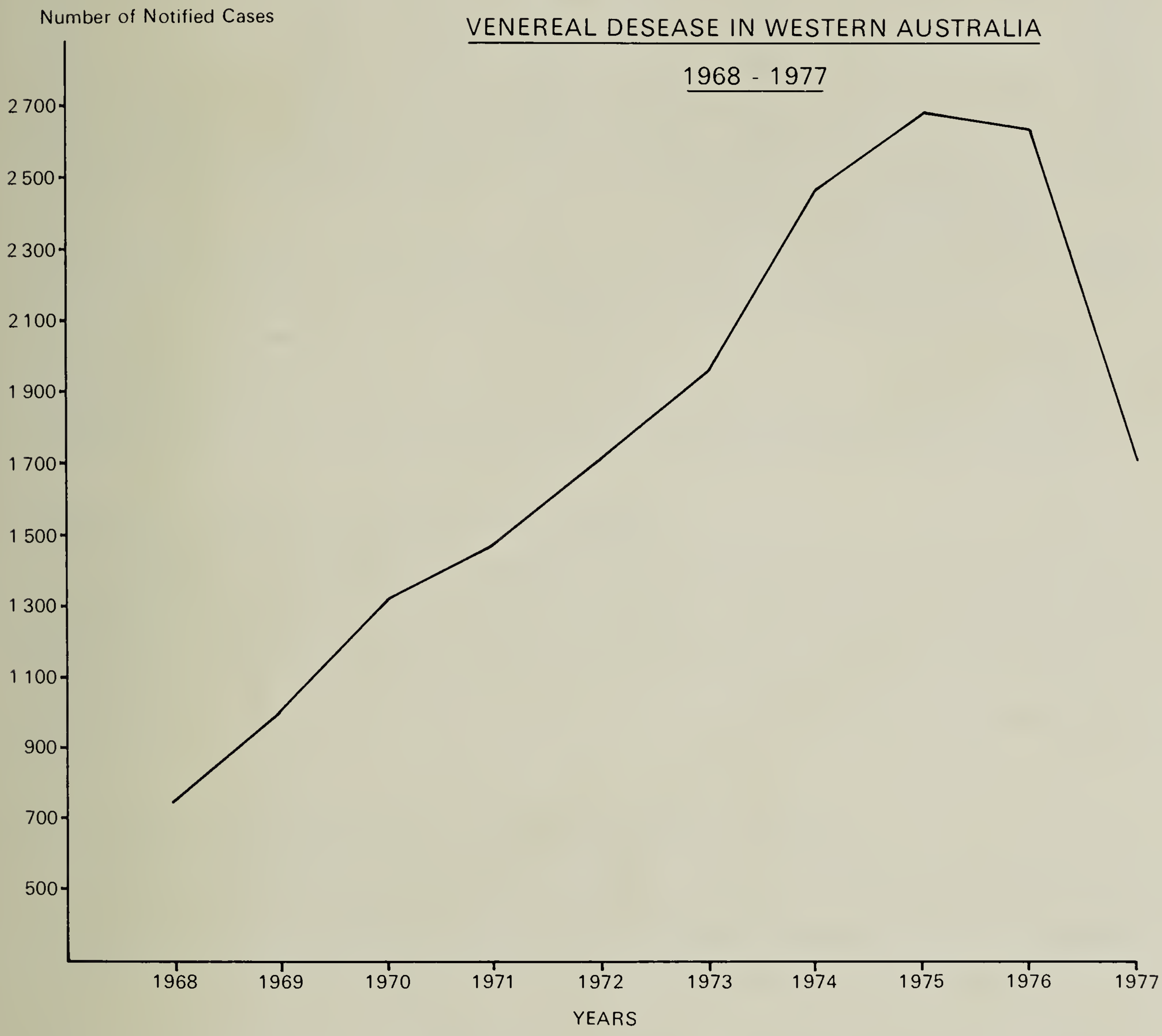
The reported decrease in the notified cases of gonorrhoea and syphilis is gratifying, but will not be maintained if complacency replaces diligence on the part of all doctors who are involved in the diagnosis of these diseases.

It is important that an awareness should be maintained by all doctors, and that accuracy of diagnosis is constantly reviewed. The diagnosis of gonorrhoea and syphilis can be an exacting and time consuming task. The gonococcus is a fragile organism which is difficult to grow in circumstances less than ideal. A diagnosis in either of these two diseases should not be made without the support of adequate laboratory facilities, and these facilities are provided by the State Health Laboratory Services. A clinical diagnosis alone is not sufficient.

FIGURE 1

VENEREAL DESEASE IN WESTERN AUSTRALIA

1968 - 1977



The incidence of some other sexually transmitted diseases which are not notifiable under the Health Act have increased in clinic patients.

The age and sex distributions of notifications in Western Australia, 1968-1977 are shown below.

NOTIFICATIONS OF VENEREAL DISEASE, W.A., 1968-77—AGE AND SEX DISTRIBUTION

(A) MALES

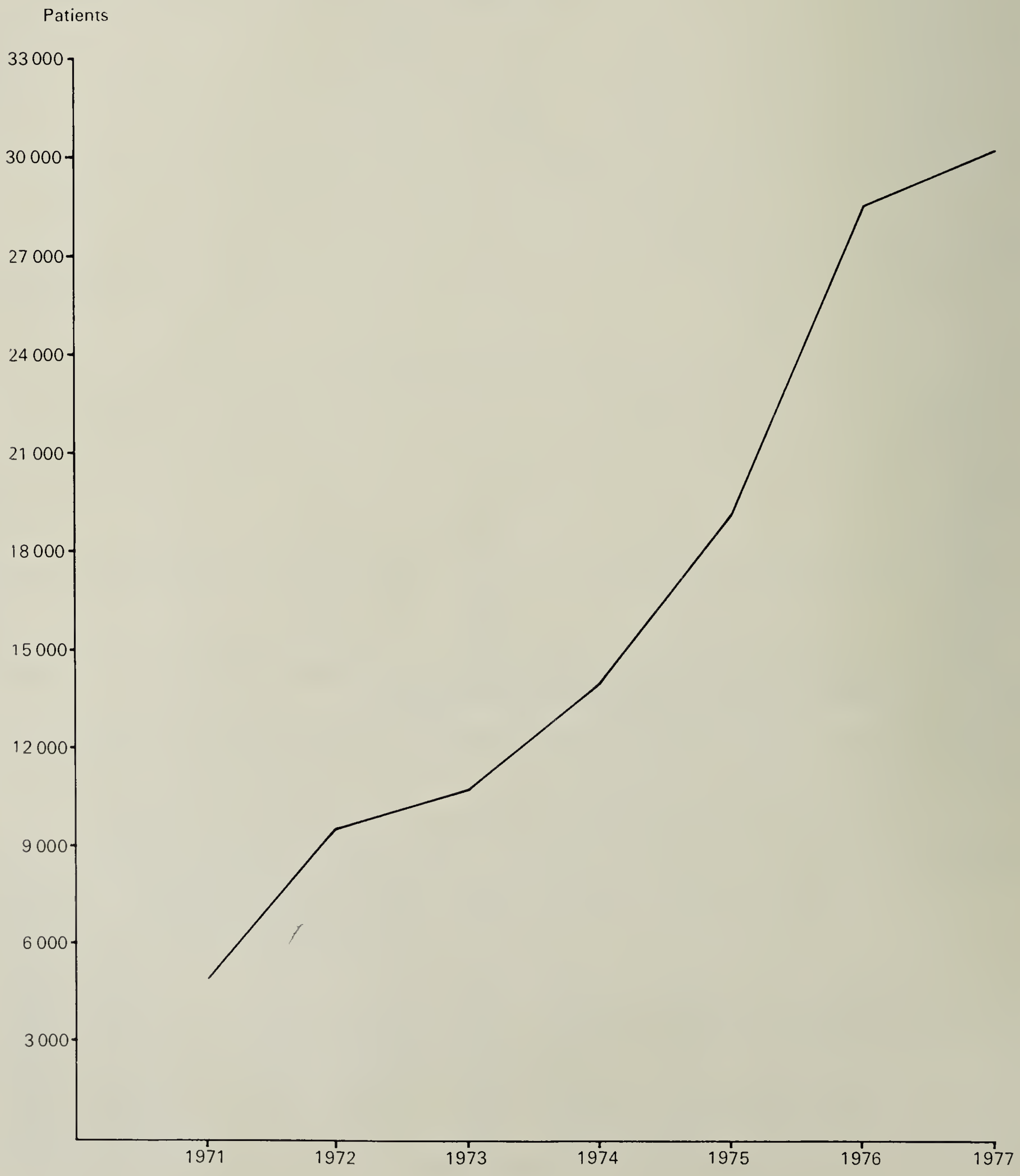
Year	0–14 Years	15–19 Years	20–24 Years	25–29 Years	30–34 Years	Over 35 Years	Age Not Stated	Total
1968	....	112	215	107	59	137	24	654
1969	....	132	243	161	121	181	20	858
1970	....	163	321	219	140	192	11	1 046
1971	....	207	357	221	132	194	3	1 114
1972	....	223	365	234	142	235	1	1 200
1973	....	285	422	271	160	230	5	1 373
1974	....	330	502	327	190	278	2	1 629
1975	9	308	545	348	159	302	27	1 698
1976	11	275	484	340	176	287	84	1 657
1977	7	207	366	237	107	172	12	1 108

(B) FEMALES

Year	0–14 Years	15–19 Years	20–24 Years	25–29 Years	30–34 Years	Over 35 Yrs.	Age Not Stated	Total
1968	....	54	28	12	12	14	5	125
1969	....	77	34	15	8	33	3	170
1970	....	89	61	38	25	60	6	279
1971	....	150	87	48	29	65	0	379
1972	....	217	99	76	47	89	0	528
1973	....	249	138	85	50	56	1	579
1974	....	313	253	113	60	103	4	846
1975	31	296	270	145	77	124	7	950
1976	29	271	283	122	58	127	28	918
1977	27	173	188	77	41	52	0	558

(N.B. 18 patients sex not stated—1976)
(N.B. 2 patients sex not stated—1977)

FIGURE 2



The following table shows the age distributions converted to percentages, of combined males and females for 1977.

Year	0–14 Years	15–19 Years	20–24 Years	25–29 Years	30–34 Years	Over 35 Yrs.	Age Not Stated
1977	2·04	22·80	33·25	18·85	8·88	13·44	0·72

Combining columns two and three shows that 56·05 per cent of the total venereal disease in Western Australia occurs in the 15–24 age group.

Similarly, by combining colums 2, 3 and 4, 74·90 per cent occurs in the 15–29 age group.

The corollory to these figures is that it is during the 15–29 age period that most couples have children. The importance of ante-natal serological tests for syphilis cannot be over-emphasised to avoid the birth of congenital syphilitic babies.

FREMANTLE HOSPITAL

The clinic has continued to function successfully. It is anticipated that the hours of consultation will shortly be increased due to the co-operation of Dr. Peter Smith.

QUEEN ELIZABETH II MEDICAL CENTRE

A clinic was commenced in November 1977, with the hours of consultation being between 8.15 a.m. and 12.30 p.m. on each week day. Consultation is by appointment. The Medical and nursing staff are supplied by the clinic, the laboratory facilities by the State Health Laboratory Services, and the other facilities by Sir Charles Gairdner Hospital.

Gratitude is expressed for the co-operation of the Medical Superintendant Dr. R. Kilgour.

KING EDWARD MEMORIAL HOSPITAL FOR WOMEN

In this year the service of visiting King Edward Memorial Hospital for Women on each Friday has been maintained. Through this service, contact tracing and management of patients with positive sexually transmissible diseases tests has been extended to areas outside the Hospital. The Medical Superintendant Dr. S. Reid has been actively involved in this programme and it is due to his co-operation that it has proved successful.

COMMUNITY HEALTH SERVICES

The lecture programme has been continued to doctors and nurses in the Community Health Services. This applies for newly appointed personnel and also to those who are actively involved in field work in many parts of the State. Not all areas of the State can be visited each year, but any doctor from the clinic, who visits country districts, establishes a contact with the Community Health Nurses.

Contact tracing is performed by the Nurses and it is due to their efforts that many patients have recieved treatment, in outlying areas.

The co-operation of the Director of Community Health and Child Health Services, Dr. R. Roberts and the Deputy Director Dr. F. Quadros has made a State-wide contact tracing and treatment service possible.

LECTURES

The policy of lecturing to medical and para medical groups, in relation to the sexually transmitted diseases, has been maintained. Lectures have been presented at numerous country centres. The results achieved have justified the effort and expense. The Health Education Council of Western Australia have continued with their school programme which is much appreciated.

CO-ORDINATING COMMITTEE FOR THE CONTROL OF VENEREAL DISEASES IN WESTERN AUSTRALIA

Under the Chairmanship of Dr. D. D. Letham, the committee was granted approval to organise a conference on sexually transmitted diseases. Preparatory plans were formulated in 1977 and the conference will be held in August 1978. Dr. R. S. Morton will be the keynote speaker.

DR. R. S. MORTON., M.B.E., F.R.C.P.(Ed.)

The Public Health Department was fortunate in securing the services of Dr. Morton for a period of 12 months. He is recognised as a world authority on sexually transmitted diseases and was a consultant venereologist to W.H.O. He commenced duties in the clinic at the beginning of September 1977.

During the time Dr. Morton has been attached to the clinic he has given a large number of lectures to medical and para medical groups, been instrumental in initiating articles for medical journals, and increased the diagnostic accuracy in the clinic. By travelling extensively throughout the State, Dr. Morton has been able to help with local problems in different areas. For the staff of the clinic, Dr. Morton has been a stimulating influence.

I would like to thank the Commissioner of Public Health and Medical Services, and the Director-General of Public Health for their co-operation and assistance during the year.

The Staff of the clinic has worked with diligence and devotion, promoting a congenial atmosphere which is so important for patient comfort. The standard of their work has been high, and it is due to their efforts in their various situations, that the clinic has been successful in 1977. To the Staff, I extend my thanks and appreciation.

Appendix V

Community and Child Health Services Branch

R. W. Roberts, M.B., B.S., F.R.A.C.G.P., D.C.H.
Director

INTRODUCTION

The year 1977 has again been one of consolidation where the emphasis has been on the development of co-ordinated preventive health services organised on a regional basis.

Due to the geographical magnitude of our State and the increasing call for service to remote areas, our work is becoming more and more decentralised. The advent of modern means of communication has greatly assisted us in this regard.

The four Sections of this Branch—Community Health, School Health, Child Health and Child Development Centre—have developed organisation and service in the Regional context whilst at the same time maintaining standards of excellence in their own particular fields. Overlap and duplication still occur in some areas but these are lessening and occupy the concern and attention of senior staff.

Community Health Section has extended its work more into areas such as migrant health, women's refuges and care of the homeless and lonely people in our society. This has been made possible from funds from the Community Health Programme in this State.

In School Health the extension of the High School Nurses programme has proceeded and pre-school children in Day Care are now completely covered in the metropolitan area by our Pre-school Health Team.

The number of babies born in W.A. in 1977 did not vary greatly as compared with 1976 but was still well below the peak year of 1971. Child Health Services are therefore dealing with a reasonably static population as far as numbers are concerned but the distribution of families continues to change considerably year by year.

The Child Development Centre, (formerly known as the Children's Assessment Centre and the youngest Section in this Branch) has developed a high quality, multi-disciplinary team and moved into new custom built premises.

COMMUNITY HEALTH SECTION

1. Introduction

The aim of this section continues to be to promote and upgrade health in individuals and families in the community that are in need. The emphasis of effort still remains on the following groups:

Aborigines
Pensioners
Migrants
Isolated Communities
Single Parents
Handicapped Persons
Homeless

The approach is a holistic one looking at the individual and the family as a unit. The service provides a screening facility for various conditions, and support, guidance and management of these conditions.

Over the past five years there has been a reduction in infective diseases but these still remain a significant cause of morbidity especially respiratory, ear infections, skin diseases and parasitic diseases in children under five years and an increasing incidence of accidents especially in the 15-49 age group. The correlation with poor housing and overcrowding, inadequate sanitation and water supply, and infective diseases is evident and unless these factors are improved no amount of health education will help change this situation.

The desire for an Aboriginal Identity and the awakening consciousness to solve their own problems has made many communities in the North West and Central Reserves move away from urban areas: in so doing they re-establish their self-esteem through traditional law systems and control the problems created by increased alcohol consumption, prostitution and delinquency in youth, etc. Some communities have implemented bilingual educational systems such as in Strelley, Noonkanbah and others have a desire to have their own Medical Services e.g. the Pitjantjatjara Homelands Medical Service in the Central Reserve. Although these systems need to be evaluated there must be a place for such a dual system. The quality and monitoring of professional standards of health workers will have to be maintained.

With rising hospital costs and the current economic recession there is an increased need for preventive supportive services readily available to the community in a home setting. More and more people with chronic ailments can be maintained in their home where they maintain their optimum well being by supportive measures undertaken by visiting health personnel. There is greater involvement of other family members and a greater understanding towards the handicapped person.

In collaboration with the Rheumatoid and Arthritis Foundation three field nurses provide care for the debilitating conditions of arthritis whereas another field nurse supervises nursing care of the multiple sclerotics. In the near future a field nurse will provide supportive and counselling services to the muscular dystrophic.

Counselling, immunisation, safety, accident prevention, family planning, childhood illnesses and psycho-social problems form a major part of the work of field staff.

2. ADMINISTRATION

2.1 Staff

There is a continuing problem of recruitment and retention of suitable staff particularly for isolated areas. Some factors contributing to this are isolation, difficult environment with hot climatic conditions, lack of social facilities, slow improvement for the amount of effort put in, long working hours and often lack of appreciation for work done.

MEDICAL AND PARAMEDICAL
STAFF AS AT 31/12/77

Category Location	No.	Resigned During 1977	Recruited In 1977
Medical Officer:—			
Admin (Perth)	2	....	....
Education	1	1	....
Kimberley	4	....	1*
Pilbara	2	....	....
Northern	3	....	....
Metropolitan	4	....	....
South West	2	1	....
Goldfields	1	1	....
Total	19	3	1
Dentists:—			
Itinerant	1	....	....
Anthropologists:—			
Kimberley	1	....	....
Northern	1	....	....
Total	2	....	....
Field Nurses	167	77	78
Field Nursing Aides/Assts.	67	24	26

* To commence 1978.

Consultants employed on sessional basis: Leprology, E.N.T., Ophthalmology.

Training of staff for Community Health needs to be reviewed. The only Australian University to offer the Diploma in Public Health is Sydney University (one academic year). One Medical Officer successfully completed this course during the year.

Nursing staff have a two-year course for the Diploma of Community Health at the Western Australian Institute of Technology. Five nurses completed this in 1977. The other centre offering a Diploma Course is the Lincoln Institute in Melbourne (one year). In-service training for field nurses consists of a two week orientation programme in Perth and a week's regional orientation. Further training is on site by visiting supervisors either from the region or central offices. A workshop is held annually and supplementary Seminars are held either at regional centres or in Perth (e.g. Family Planning, S.T.D., Alcohol and Drug Dependency, etc.).

A training manual for Aboriginal Health Assistants has been completed and the training programme is to be implemented during 1978.

2.2 Staff In-Service Training

2.2.1 Workshop entitled "Organisation" involved all metropolitan staff for eight half-day sessions for eight weeks.

2.2.2 Family Planning: 24 staff attended two workshops in May and August, conducted by the Family Planning Association in Western Australia.

2.2.3 Three medical officers attended a Course on Community Developmental Paediatrics.

2.2.4 Orientation: (i) Seven programmes two weeks' duration—46 field staff
(ii) Flying nurses—six new staff members.

2.3 State Conference

Aides/Assistants: 55 attended the one-week conference "Helping People to Help Each Other". Professor Max Kamien gave the keynote address.

Nurses: Opened by the Honorable Minister for Health, Mr. A. Ridge, "The Community—Who Cares?"
126 nursing staff attended.

Medical Officers: 9/5/77-13/5/77. Combined Community and Child Health Medical Officers. Wide range of topics discussed including Paediatric Problems in the North, skin disorders trachoma, hearing impairment and alcohol and drug dependence.

2.4 Training With Other Agencies

2.4.1 Alcohol and Drug Authority

Rotation of metropolitan and south west based Aides and Assistants continued throughout the year. The aims were to give an awareness of the types of facilities and treatment available in this field and to introduce simple counselling techniques.

Mr. Robert Isaacs, one of our Health Assistants, was seconded to the Alcohol and Drug Authority for six months.

2.4.2 Special Clinic for Sexually Transmitted Diseases

Assistants and Field Nurses attended an ongoing training programme throughout the year.

2.4.3 Rape Crisis Programme

Perth
Kalgoorlie } 39 staff attended
Port Hedland

2.4.4 Aboriginal Liaison Officer's Course

Four assistants attended the 10-week course conducted by WAIT-AID

2.4.5 Study Leave

One Aboriginal Assistant, Mr. Graham Nettle, was granted Study Leave for one academic year to attend Perth Technical College.

2.5 Training For Other Services

2.5.1 Medical students—worked with Aboriginal Aides and Assistants for one day per week for 3/12.

2.5.2 Social work students.

2.5.3 Nursing students.

2.6 Centres

Regional Headquarters	6
Office/Clinics	61
Nursing Posts	10

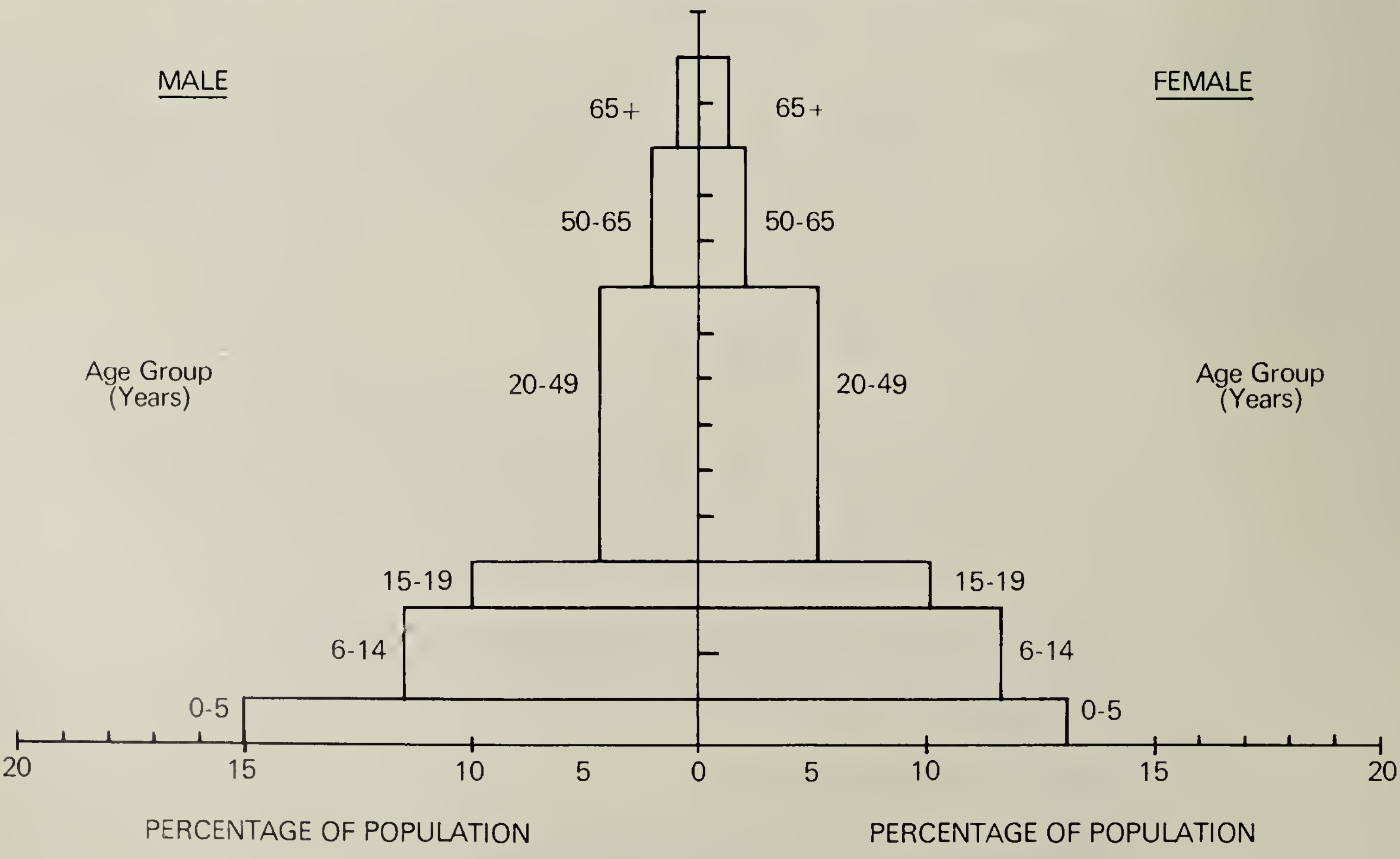
Staff Accommodation:

Flats	68
Houses	39
Caravans	27

New Centres Opened During the Year

(a) Karratha Community Health Centre....	2/2/77
(b) Narrogin ⎱ Community Health Services	1/8/77
(c) Looma ⎰	8/9/77
(d) Kambalda Medical Centre	10/77
(e) Geraldton Community Health Centre	17/10/77
(f) Newman Community Health Centre	25/10/77
(g) South Hedland Community Health Centre	9/12/77
Centres closed: Wagin, now visited from Katanning	18/11/77

SEX/AGE DISTRIBUTION OF COMMUNITY HEALTH CLIENTS — 1977



All information is from Computerised Health Records

3. ABORIGINAL POPULATION

APPROXIMATE ABORIGINAL POPULATION FIGURES BY AREA
(data provided by D.A.A. Regional Office, Perth) Figures are estimates only.

Location	Male	Female	Total
Kimberley	N.A.	N.A.	8 749
Pilbara	2 556	2 660	5 216
Goldfields	1 872	1 879	3 751
Northern	2 487	2 277	4 764
South West	2 586	2 549	5 135
Metropolitan	4 148	4 443	8 591
Total	....	....	32 306

N.A. denotes Not Available.

4. MORBIDITY STATISTICS

(Data provided by the statistical division of the Public Health Department).

4.1 W. A. Hospitals 1977

Patients discharged by Race and Principal Condition.

4.1.1 Discharges (See table below).

4.1.2 Average Number of Days in Hospital (See table below). Per cent of Total Bed Days

Discharges from W.A. Hospitals by percentage of the six most common conditions classified by race.

ABORIGINES		NON-ABORIGINES	
Principal Condition	Per cent Per cent of Total Discharges	Principal Condition	Per cent Per cent of Total Discharges
1. Respiratory System	18 80	1. Accidents, Poisoning and Violence	11.58
2. Accidents, Poisoning and Violence	15.77	2. Genito-Urinary System	10.94
3. Infective and Parasitic	11.86	3. Pregnancy and Childbirth	10.24
4. Symptoms and Ill-defined Conditions	9.60	4. Respiratory System	9.66
5. Nervous System and Sense Organs	7.59	5. Digestive System	9.16
6. Pregnancy and Childbirth	7.19	6. Symptoms and Ill-defined Conditions	7.77

W.A. HOSPITALS 1977—PATIENTS DISCHARGED BY RACE AND PRINCIPAL CONDITION

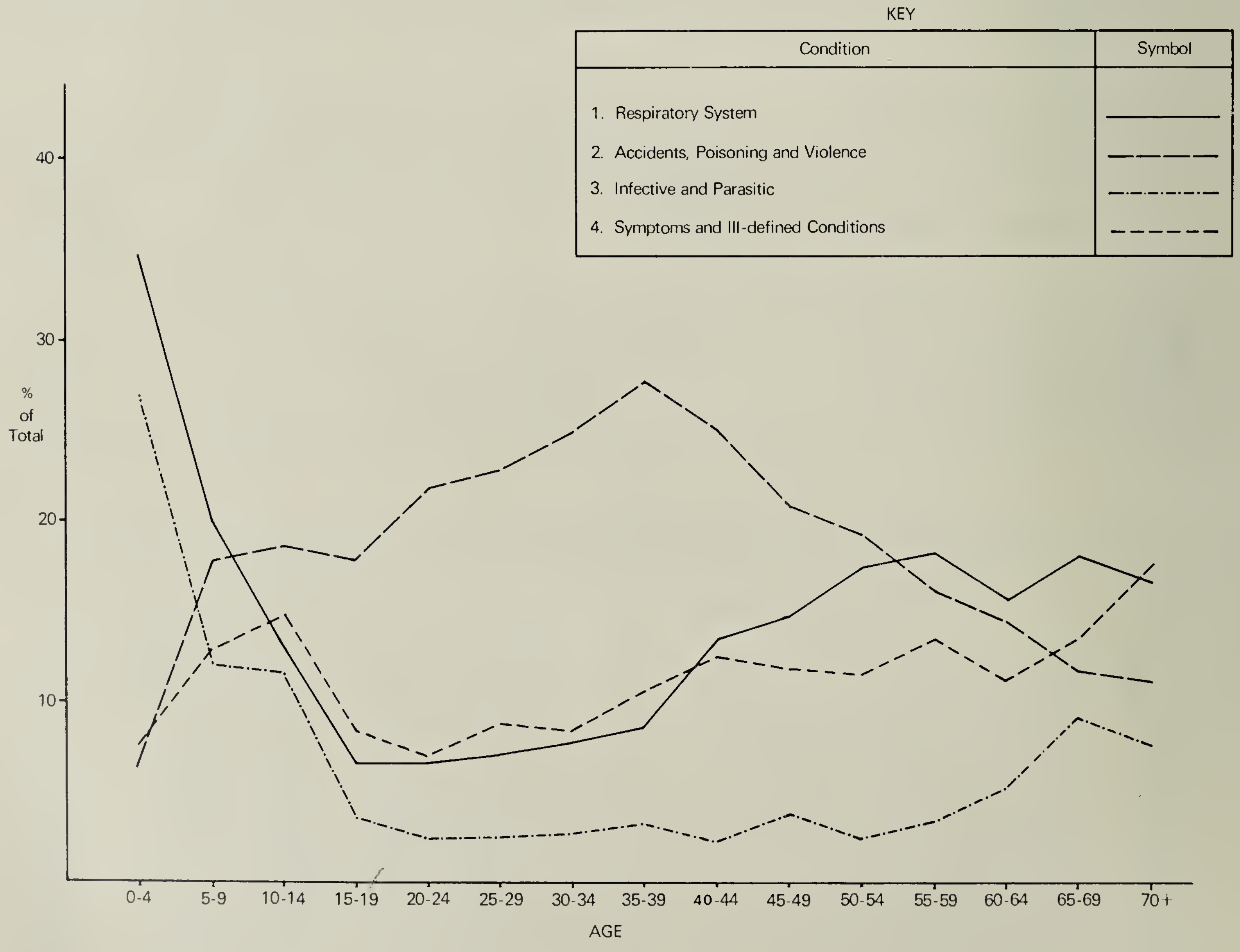
I.C.D. Categories	Principal Condition Groups	Discharges				
		Aboriginal		Non-Aboriginal		
		Number	% for Group	Number	% for Group	Total
000–136	Infective and Parasitic	2 048	19.0	8 709	81.0	10 757
140–239	Neoplasms	90	0.9	9 805	99.1	9 895
240–279	Endocrine, Nutritional, Metabolic	342	10.7	2 849	89.3	3 191
280–289	Blood and Blood Forming Organs	88	6.5	1 271	93.5	1 359
290–315	Mental Disorders	407	5.6	6 849	94.4	7 256
320–389	Nervous System and Sense Organs	1 312	9.4	12 572	90.6	13 884
390–458	Circulatory System	554	3.1	17 296	96.9	17 850
460–519	Respiratory System	3 247	11.6	24 711	88.4	27 958
520–577	Digestive System	629	2.6	23 423	97.4	24 052
580–629	Genito-Urinary System	724	2.5	27 986	97.5	28 710
630–678	Pregnancy and Childbirth	1 242	4.5	26 191	95.5	27 433
680–709	Skin and Subcutaneous Tissue	949	11.7	7 147	88.3	8 096
710–738	Musculoskeletal System	309	2.1	14 679	97.9	14 988
740–759	Congenital Anomalies	65	2.5	2 548	97.5	2 613
760–779	Perinatal Morbidity	64	11.2	505	88.8	569
780–796	Symptoms and Ill-defined Conditions	1 658	7.7	19 886	92.3	21 544
N800–N999	Accidents, Poisoning, Violence	2 725	8.4	29 628	91.6	32 353
Y00–Y89	Supplementary Classifications	822	4.0	19 779	96.0	20 601
	Total	17 275	6.3	255 834	93.7	273 109

W.A. HOSPITALS 1977—RACE-SPECIFIC LENGTH OF STAY BY PRINCIPAL CONDITION TREATED

I.C.D. Categories	Principal Condition Groups	Average Number of Days in Hospital			% of Total Bed Days		
		Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total
000–136	Infective and Parasitic	11.1	5.4	6.4	1.12	2.31	3.43
140–239	Neoplasms	12.4	12.2	12.2	0.06	5.91	5.97
240–279	Endocrine, Nutritional, Metabolic	11.1	12.1	12.0	0.19	1.71	1.90
280–289	Blood and Blood Forming Organs	9.2	6.7	6.9	0.04	0.42	0.46
290–315	Mental Disorders	7.9	13.5	13.2	0.16	4.59	4.75
320–389	Nervous System and Sense Organs	9.9	7.6	7.8	0.64	4.71	5.35
390–458	Circulatory System	16.3	13.9	14.0	0.45	11.89	12.33
460–519	Respiratory System	7.6	5.4	5.6	1.22	6.58	7.81
520–577	Digestive System	8.3	6.9	6.9	0.26	7.98	8.24
580–629	Genito-Urinary System	7.0	4.9	4.9	0.25	6.77	7.02
630–678	Pregnancy and Childbirth	9.3	7.0	7.1	0.57	9.09	9.66
680–709	Skin and Subcutaneous Tissue	8.1	6.8	7.0	0.38	2.41	2.79
710–738	Musculoskeletal System	11.0	9.0	9.0	0.17	6.53	6.70
740–759	Congenital Anomalies	14.7	6.3	6.5	0.05	0.79	0.84
760–779	Perinatal Morbidity	22.3	11.0	12.3	0.07	0.28	0.35
780–796	Symptoms and Ill-defined Conditions	9.0	7.3	7.4	0.74	7.15	7.88
N800–N999	Accidents, Poisoning, Violence	7.5	6.7	6.8	1.01	9.82	10.83
Y00–Y89	Supplementary Classifications	6.1	3.5	3.6	0.25	3.44	3.69
	Total	8.9	7.3	7.4	7.63	92.37	100.00

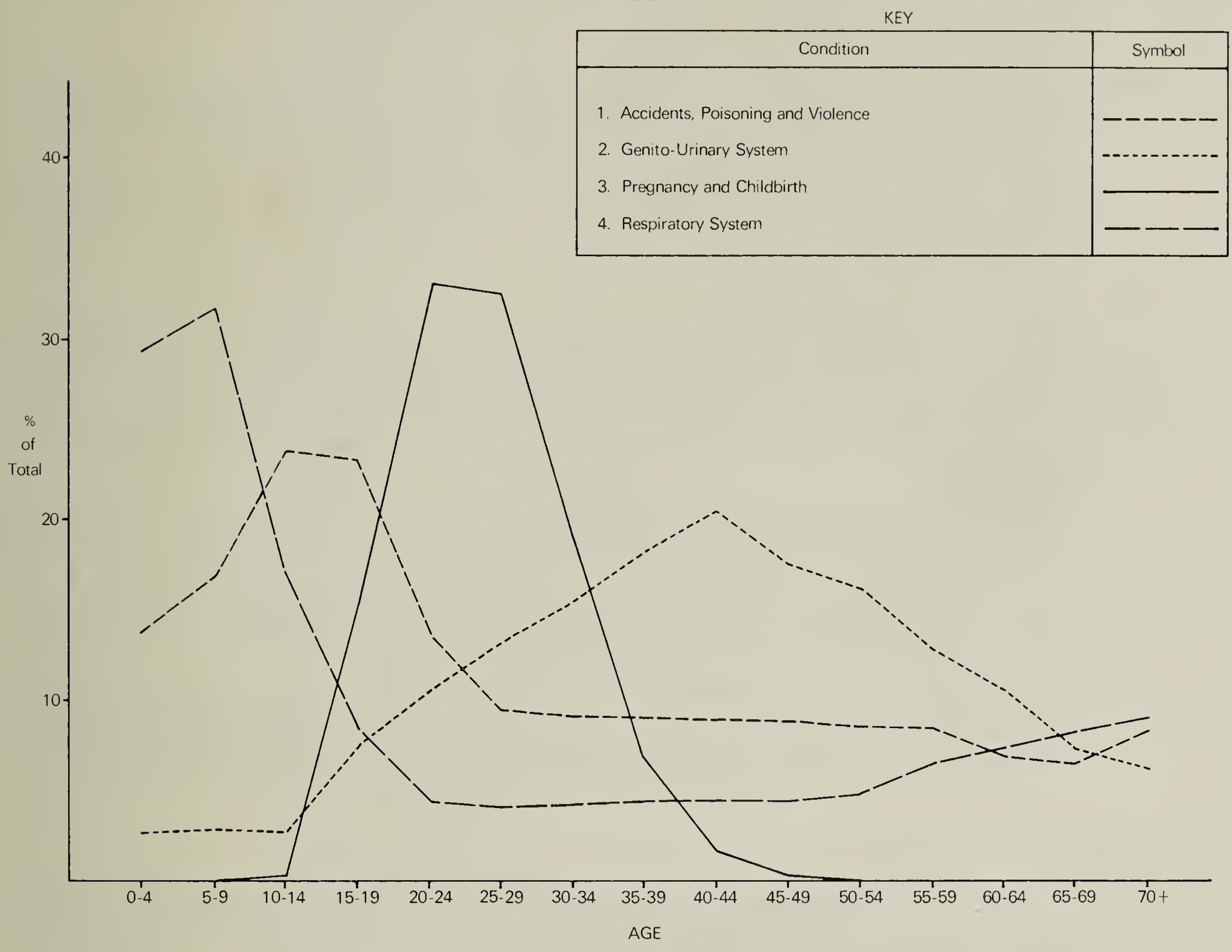
ABORIGINES – PERCENTAGE X AGE X THE FOUR MAJOR CONDITIONS

1977



NON-ABORIGINES – PERCENTAGE X AGE X THE FOUR MAJOR CONDITIONS

1977



The reasons for discharges from Hospitals by principal conditions in Aborigines has not changed in order of incidence from 1976.

4.2 Respiratory System

Over 56 per cent of discharges in this category were in children under four years of age in the Aborigines compared to 25 per cent in the non Aboriginal patients. In both population groups males predominated over females with a ratio of 1.4:1 for Aborigines and 1.7:1 in Non-Aborigines. The principal diseases in this I.C.D. group for Aborigines were acute upper Respiratory infections, pneumonia, bronchitis and asthma.

4.3 Accidents, Poisoning and Violence

Aborigines: 10 per cent of discharges for this I.C.D. category were in children below four years; however there was an even distribution of incidence in age groups up to 49 years following which the incidence reduced.
Non-Aborigines: 10 per cent of all discharges were in the age group 0–4 years and 33 per cent occurred in the 15–29 age group with a 2.8:1 male/female ratio. Six percent of accidents were in the over 70 years age group with females 2:1 males.

4.4 Infective and Parasitic

In Aborigines, 75 per cent of discharges in this group were in children under four years whereas only 33 per cent of the Non-Aboriginal children under four years accounted for hospitalisation for this condition. Intestinal infestations accounted for nearly 50 per cent of this category with viral infections and mycosis as the next major causes in the Aboriginal children.

4.5 Symptoms and Ill-Defined Conditions

This group accounted for 10 per cent of all Aboriginal discharges from hospitals.

4.6 Nervous System and Sense Organs

36 per cent of these amongst Aborigines is in the 0–4 year olds and approximately 56 per cent are diseases of the ear and mastoid and 25 per cent are inflammatory diseases of the eye.
16 per cent in this group occur in the 5–9 age group, again, mainly with ear and eye disease.

4.7 Pregnancy and Childbirth

In Aborigines 36 per cent of all discharges in this category were between 15–19 years and 49 per cent between 20–29 years compared with 10 per cent of non-Aborigines in the 15–19 years and 69 per cent in the 20–29 years group. From these figures it is obvious that Aboriginal women are pregnant at a younger age.

Three per cent of the total population for W.A. (mean population — 1 197 000 —preliminary figure quoted for 1977, W.A. Bureau of Statistics Monthly Statistical Summary, June 1978) are Aborigines. They account for 6.3 per cent of all hospital discharges. 30 per cent of all discharges for Aborigines are in the age group 0–4 years.

In 1977 the average number of days in hospital was 8.9 for Aborigines and 7.3 for Non-Aborigines. This is a reduction from 1976 where the average number of days in hospital for Aborigines was 9.7 and Non-Aborigines 7.6.

5. MEDICAL AUDITS

5.1 The aim is to give people an opportunity for a medical examination and to screen for disabilities. This allows for analysis of individual problems for the purpose of seeking optimum intervention for prospective management and preventive measures.

5.2 At the regional and state level demographic data and prevalence for morbidity categories allows for insight into the health problems of Aboriginal communities for more effective planning and distribution of scarce medical and health resources.

5.3 Certain principles are observed:

5.3.1 Discussions are held by Regional and local staff with Community elders and councils on the objectives of the audit. Permission is obtained for the conduct of these audits.

5.3.2 The examinations are entirely by voluntary participation.

5.3.3 Confidentiality of information is maintained.

5.3.4 Existing health facilities are utilised for management of problems detected at examination.

MEDICAL AUDITS CONDUCTED THROUGHOUT W.A.—1977

Age	No.	Per cent
0–5 years	344	16 5
6–14 years	530	25.5
15–19 years	178	8.5
24–49 years	712	34.2
50–64 years	189	9.1
65 Plus	117	5.6
Unknown	12	0.6
All Ages	2 082	100.0

5.4 Summaries of some audits are given below:

PILBARA: Wittenoom

Age Groups	Male	Female	Total
Under 1 year	3	0	3
1–4 years	6	6	12
5–14 years	15	12	27
15–59 years	12	19	31
60 years and over	2	1	3
Total	38	38	76

Problems detected:

5.4.1 *Eyes*

Trachoma (active, for total group)	37 (48%)
Active below 15 years	32 (76% of this age group)
Conjunctivitis	2 (2.6%)
Vision:	
Referral to ophthalmologist	17 (22.4%)

5.4.2 *Ears*

Otitis Externa	3 (4%)
Discharging Ears/Excessive wax	9 (11.8%)
Referrals to otolaryngologist	5 (4%)

5.4.3 *Teeth*

Referrals to dentist	5 (6.6%)

5.4.4 *Other Conditions*

Diabetes Mellitus	1
Hypertension	1
Fungal skin lesions	6
Re Active Treponemal Serology (VDRL)	1
Urinary Infections	4 (all females above 20 years of age)
Cervical smears (showed no evidence of neoplasia)	12

Out of 13 vaginal swabs, four with positive Trichomonial infection.

5.4.5 *No anaemias or Hansens detected.*

5.5 **Strelley Audit**

Age	Male	Female	Total
Under 12 months	5	2	7
12–59 months	23	20	43
5–15 years	35	54	89
15–59 years	48	66	114
60 years	8	7	15
Total	119	149	268

Problems detected:

5.5.1 *Eyes*

Trachoma	51 active 29 below 15 years
Cataracts	10
Pterygium	1
Strabismus	1
Impaired Vision	14
Blind	1 (Right eye only)
Referrals	26

5.5.2 *Ears*

Age	Wet	Dry—Perf
0–5 years	17	3
5–15 years	22	4
15–60 years	10	....
Total	49	7

5.5.3 *Teeth*

Twelve periodontal disease.

5.5.4 *Other Conditions*

Diabetes: seven new cases detected. 13 previously on treatment.
Chronic Respiratory Disease: 20.
Hypertension: two new cases. Eight already on treatment.
Obesity: six new cases, 13 previously on follow up.
Reactive Treponemal Serology — 10 (5.29%).
Gonorrhoea: three (one female aged 16 and two males 23 and 46 years old).
Trichomonal Infection: five females.

5.6 **Mowanjum Audit**

Mowanjum is a community of appoximately 243 permanent residents, although there are a great number of transient members, particularly influenced by the change of season (wet and dry). The community is comprised of three main tribal groups—Worora, Wunambal and Ngarynin; their tribal territory is in the north of the Kimberley region, but the group came to Derby in 1956 under the auspices of a mission. Mowanjum is sited a few kilometres out of Derby, comprised of substandard corrugated iron housing roughly in tribal groupings. Plans are underway to resite the settlement a few miles away, with new housing, possibly starting in 1978.

Altogether 221 of the estimated 243 permanent residents were examined (91 per cent of the population).

5.6.1 *Analysis of Findings*

5.6.1.1 Appoximately 30 per cent of patients had bowel infestations shown by stool examination (mainly ancylostoma duodenale; several patients had salmonella cultured).

5.6.1.2 54 per cent of females and 67 per cent of males had low serum iron.

5.6.1.3 79 per cent of females and 86 per cent of males had low folate (however, these figures may be misleading, as folate is quite labile unless the sample is separated immediately and would be falsely low unless ascorbic acid is added to the specimen).

5.6.1.4 15 per cent were hypocalcaemic.

5.6.1.5 13 per cent were hypercholesterolaemic.

5.6.1.6 21 per cent chemically diabetic.

5.6.1.7 27 per cent were hypertensive.

5.6.1.8 There were the expected high numbers of tinea corporus, scabies, otitis media, trachoma, caries, etc, that are found in most aboriginal communities.

5.6.2 *Summary*

Most of the problems of ill health encounted were due to poor standards of hygiene, crowded living, substandard housing, ignorance concerning health matters and to alcohol abuse. The cause of the diabetes is multifactorial but the poor diet with high carbohydrate content must be largely to blame. It is not surprising under such conditions to have a high prevalance of bowel infestation (the health inspector recently cultured faecal coliforms from the water supply tank—this was uncovered and used as a swimming pool by the local children—this is to be rectified).

5.7 Fitzroy Crossing Oral Health Survey

(Extracts of Report by Mr. P. McAuliffe, Dental Surgeon)

The objectives of the survey were:

To determine the type, extent and severity of dental disease with special emphasis on its relationship to other health problems.

A complete oral pathology survey of lips and oral cavity.

To record atrophy of the anterior nasal spine and atrophy of the maxillary alveolar process. To establish if these conditions are of diagnostic importance in the early detection of leprosy.

To provide an understanding of the dental health problems of remote communities, so that information can be passed on to dental officers, therapists and aboriginal health officers who work in these areas.

5.7.1 *Age Groups*

The sample consisted of 891 clients, the age groups being:

0– 5 years	123
6–10 years	135
11–15 years	112
16–20 years	77
21–30 years	121
31–40 years	102
41–50 years	97
51 plus	124

5.7.2 *Results*

Prosthetic Requirements:

Criteria—where in the opinion of the examiner there are insufficient teeth to allow adequate masticatory function.

Age (in yrs)	0–10	11–15	16–20	21–30	31–40	41–50	51 Plus
Dentures Required	....	....	....	Per cent 0·83	Per cent 11.78	Per cent 14.43	Per cent 31.26

Discussion—Dentures required could be either full or partial removable dentures. It might be debated that Aboriginal people would not accept these prostheses, but in the survey there were six clients who were wearing dentures. In many of the cases where there were insufficient teeth for adequate mastication, the periodontal situation of existing teeth was so poor that a full mouth clearance would be necessary.

If treatment was to be offered to these people, careful consideration would have to be given to the reaction of others, if after removing existing teeth (due to advanced periodontal involvement) and the construction of dentures, it was found the patient would not tolerate artifical appliances.

Dental Caries

Criteria

Minimal Dental Caries—where there are three or less obvious carious lesions.

Gross Dental Caries—where there are four or more carious lesions.

Age (in yrs)	0–10	11–15	16–20	21–30	31–40	41–50	51 Plus
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Minimal Dental Caries	22.09	40.18	35.06	33.88	26.47	25.77	25.00
Gross Dental Caries	4.65	1.78	7.80	25.62	35.29	32.99	29.84
Total	26.74	41.96	42.86	59.50	61.76	58.76	54.84

Discussion—The figures indicate that once children leave school there is a marked increase in the number of carious lesions. It is obvious that in a captive population, such as those in schools, the percentage of people with gross dental caries is small. In the post school age groups, there is a progressive increase in the numbers with gross dental caries, up to the age of 40. The reduction after this age is due to loss of teeth through periodontal disease and/or dental caries.

It was noted in the survey that very few of the adult clients had any restorations or demonstrated any knowledge of basic oral hygiene.

Exodontia

Criteria

Extractions required to dental caries—where in the opinion of the examiner the teeth need to be removed because of gross caries or periapical abscesses.

Extractions required due to periodontal disease—where in the opinion of the examiner the teeth need to be removed because of gross periodontal disease.

Age (in yrs)	0–10	11–15	16–20	21–30	31–40	41–50	51 Plus
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Extractions required due to Caries	....	1.78	2.60	8.60	13.73	13.40	25.80
Extractions required due to periodontal Disease	....	....	....	0.83	2.94	5.15	24.19
Total Extractions	....	1.78	2.60	9.09	16.67	18.55	49.99

Discussion—The figures recorded for extractions due to periodontal disease are possibly very conservative. Cases were only recorded where there was considerable mobility and/or suppurating periodontal abscesses. A feature of the survey was the large numbers of teeth with acute or chronic dento alveolar abscesses and suppurating periodontal abscesses. A number of clients who were suffering pain thought that it was something that had to be endured and little could be done to relieve the discomfort.

Calculus, Gingivitis, Advanced Periodontitis

Criteria

Calculus—where supra and/or subgingival calculus can be detected with mirror and probe.

Gingivitis—where there is a marked change in the colour of the gingiva or bleeding on digital pressure.

Advanced Periodontal Disease—where there is definite tooth mobility and/or there is pocket formation greater than three mm in depth accompanied by one of the following: intense gingivitis, marked change in gingival contour, suppuration or advanced recession with exposure of cementum.

Age (in yrs)	0–10	11–15	16–20	21–30	31–40	41–50	51 Plus
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Calculus	7	24.70	68.83	66.94	82.35	89.69	91.94
Gingivitis	44.57	91.96	92.20	84.30	85.29	90.72	91.94
Advanced Periodontitis	0.39	4.45	18.18	28.10	60.78	73.20	86.29

Discussion—The survey figures indicate that disease of the periodontium is the greatest dental problem of Aboriginal people. The figures do not indicate the severity of the disease. In most cases of advanced periodontal disease, it was possible to express pus from all surfaces of teeth, the older the client generally the more severe the periodontal destruction and infection. In most of the clients over the age of 50, the disease is irreversible, except by major periodontal surgery. Generally, those under 40 years of age could be treated by scaling and subgingival curettage. It was obvious that the majority of the clients had no idea they were suffering from slow progressive periodontal disease, or had any knowledge of self care.

Because of the nature of periodontal disease, it is most unlikely that Aboriginal people would seek regular prophylaxis and counselling at fixed clinics. A periodontal programme based on community involvement in the Aboriginal camps and on stations, explaining the causes and effects of destructive periodontal disease, explaining the need for scaling and polishing of teeth, demonstrating methods of self care, and followed by therapeutic care of active cases, would possibly be the best method of reducing the incidence of this disease. With very old patients or with cases of extremely advanced periodontal disease removal of calculus should be avoided so as not to risk exacerbating an irremediable situation.

Pathology

The incidence of pathology of the oral cavity and lips (other than pathology of teeth and supporting structures) is quite high.

Age (in yrs)	0–10	11–15	16–20	21–30	31–40	41–50	51 Plus
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Pathology	1.16	2.68	1.30	2.48	6.86	3.09	8.06

Most conditions seen were obviously benign. The majority of lesions were papillomas or verruca vulgaris. There were a number of hyperkeratotic lesions which should be biopsied, especially in those clients who chew tobacco and place the wad against the buccal mucosa. One client had a large ulcerating lesion on the lateral surface of the tongue which was biopsied.

5.7.3 *Summary*

The survey has shown that the oral health of people seen at Fitzroy Crossing is very poor. The Aboriginal people have no knowledge of dental disease and no knowledge of the methods of self care.

Many of the people have received no dental treatment, and the majority of those that have, have experienced extractions only. Most of the Aboriginal people require some professional help to remedy existing dental problems.

It would appear that to improve the existing problems an educational programme involving Aboriginal communities, especially the non-captive population groups, is necessary. The success of such a programme in teaching the causes and effects of destructive dental disease, and methods of self care, would depend on the support received from tribal elders and other influential people of the tribe. Once such programmes are established a second phase of therapeutic care should be initiated, care being taken in the initial stages to ensure that only cases where improvement is imminent are taken on.

5.8 Southwest—Quairading Audit

While individual health problems were not neglected, the main object of the exercise was to study group health problems, and the evolution of these problems over a period of time. From the departmental point of view it is necessary to establish the changes in patterns of health so that current priorities could be ascertained and greater emphasis laid on action in these fields. To arrive at this objective a study of prevalence of diseases pertaining to each system, included on the medical audit protocol form was made for all age groups with a further breakdown into age groups below 15 years and above. This study was based on the number of occurrences of disease (recurrences excluded) from the history and medical examination. The current health pattern was also studied based on incidence of diseases pertaining to each system at the time of the medical audit i.e. basis was the medical examination and laboratory results. The two patterns emerging could then be compared and the shift of the disease pattern at the time of audit could be seen.

5.8.1 The more common current problems seen at medical examination and on laboratory examination were:

Dental problems	25 (64%)
Chronic lymphadenitis	14 (33%)
Hypertension	11 (27.5%)
Scabies	9 (23%)
Ulcers legs	7 (17.5%)
Intestinal parasites	6 (15%)
Bronchitis	4 (10%)
Perforated Tympanic Membranes	4 (10%)
Iron Deficiency anemias	4 (10%)
Diabetes mellitus	2 (5%)
Obesity	2 (5%)
Carcinoma cervix	1 (2.5%)

From the findings it was evident that in the 0–15 year age group diseases of the skin and mouth, and chronic lymphadenitis, have not only been major problems in the past but continue to be so at the current date.

In the 15 years plus age group oral diseases have been not only the biggest problem in the past but continue to be a current priority health problem.

There has been a shift of cardio-vascular disease from 4th priority in the past to 2nd priority currently in the 15 years plus age group; while genito urinary disease has shifted from 7th priority to 4th priority in the same group over the same period of time.

The immunisation status of the group was not studied as records did not appear to be complete.

5.8.2 *Action*

Thirty-four referrals have been made to General Practitioners and 23 to Dental Surgeons for attention of specific conditions detected. Personal advice was given where indicated.

Routine health education is being carried out in fields of dental health, weight control, personal hygiene and early treatment of minor illness.

6. NUTRITION

Nutritional Anthropometric State Figures: 1975/1977. There is little change in the situation between 1975 and 1977.

The percentage of children below the normal range of weight for height remains around 5 per cent, and does *not* increase with age.

The percentage of children *below* the normal range of height for age is around 20 per cent. Increases are seen mainly in the 7–11 and 12–60 month periods.

TABLE 1

PER CENT OF CHILDREN, 0–5 YEARS OF ABOVE 100 PER CENT THE HARVARD STANDARD

	Age Group (months)	1975	1977
Weight for Age	0–3	54	44
	4–6	45	50
	7–11	28	29
	12–60	18	18
	0–60	23	21
Height for Age	0–3	40	35
	4–6	37	35
	7–11	20	26
	12–60	7	7
	0–60	11	11
Weight for Height....	0–3	42	34
	4–6	47	41
	7–11	45	40
	12–60	41	38
	0–60	42	38

TABLE 2

PER CENT OF CHILDREN, AGED 0–5 YEARS, BELOW THE NORMAL RANGE OF THE HARVARD STANDARD

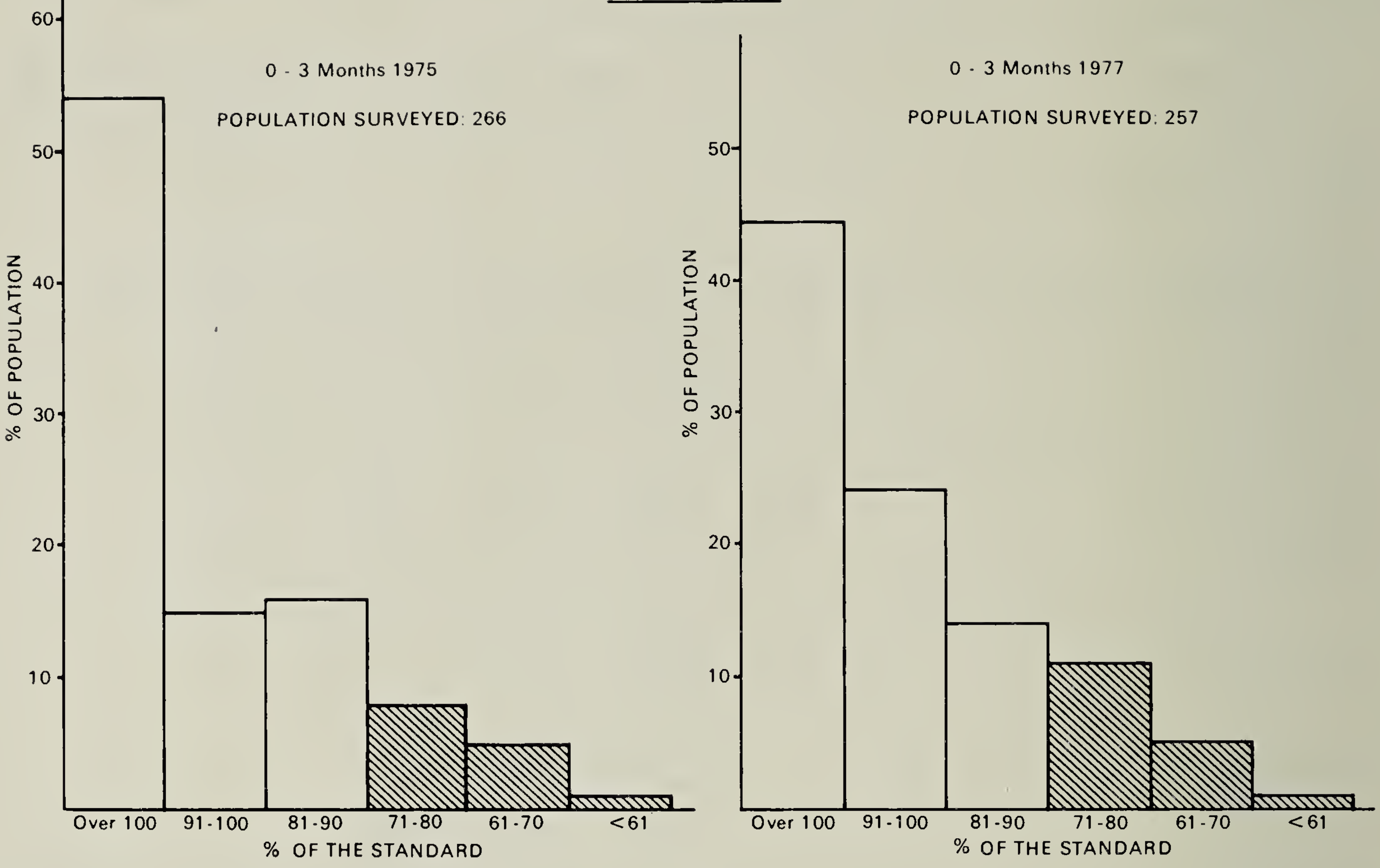
	Age Group (months)	1975	1977
Weight for Age	0–3	14	17
	4–6	14	11
	7–11	18	18
	12–60	22	23
	0–60	20	22
Height for Age	0–3	11	9
	4–6	7	6
	7–11	12	8
	12–60	23	21
	0–60	20	19
Weight for Height....	0–3	9	10
	4–6	7	8
	7–11	9	7
	12–60	5	8
	0–60	5	5

6.1 Nutritional Anthropometry 1977

The distribution of measurements in each age group for 1977 are shown in greater detail in the histograms.

In the histograms unshaded columns indicate children within the normal range and diagonally shaded columns indicate those below the normal range (Harvard Standard).

WEIGHT FOR AGE



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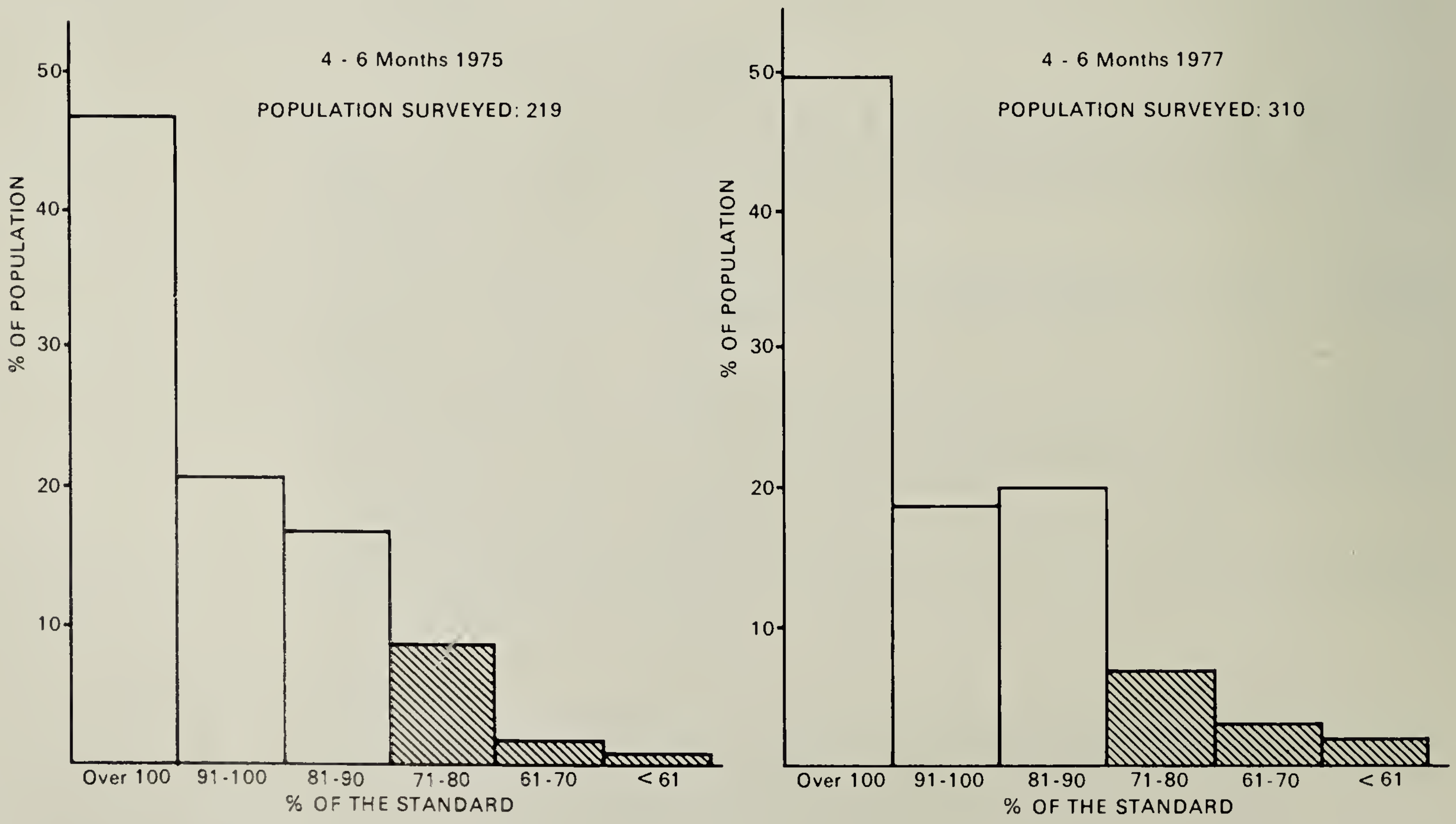

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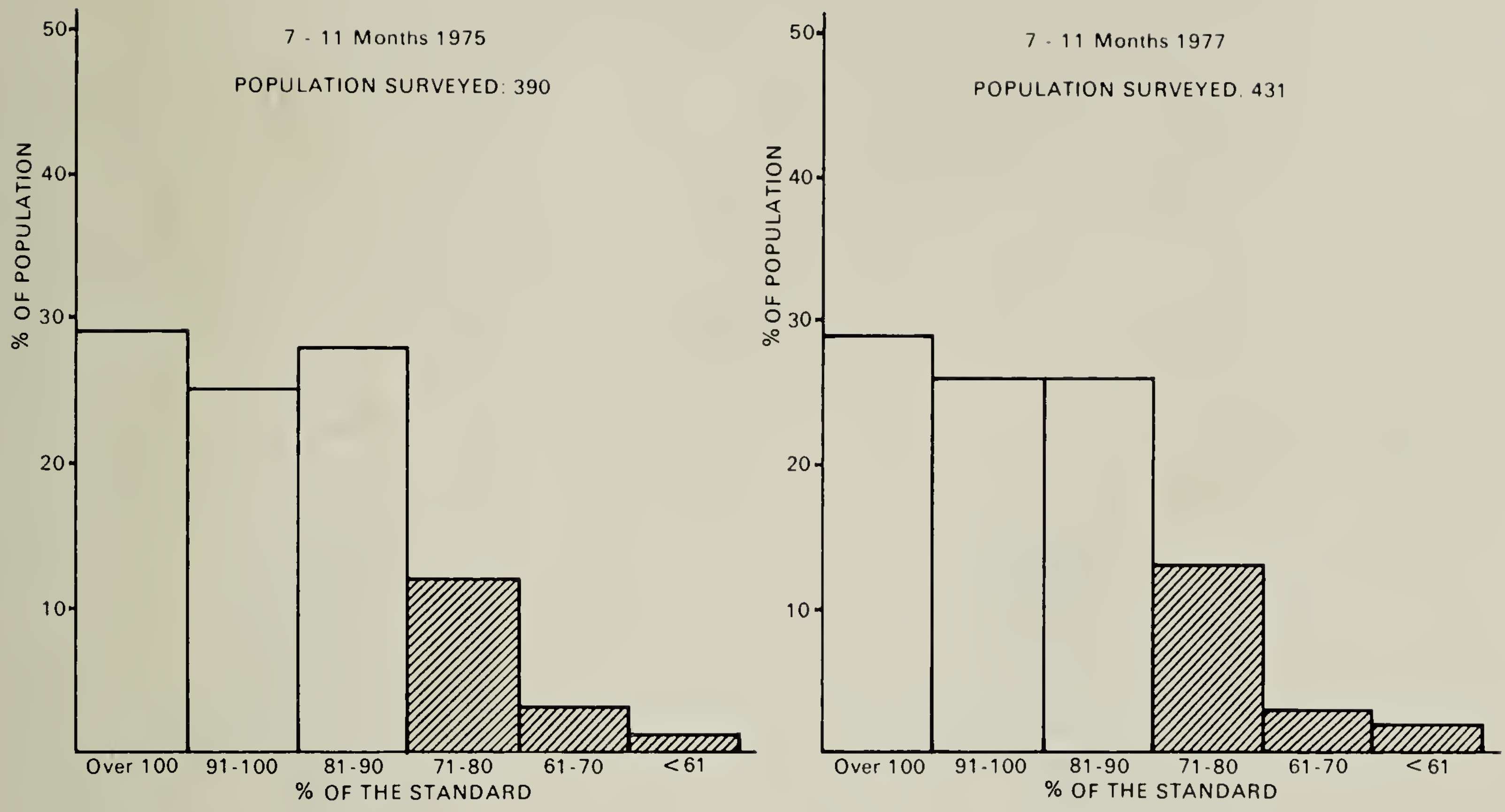

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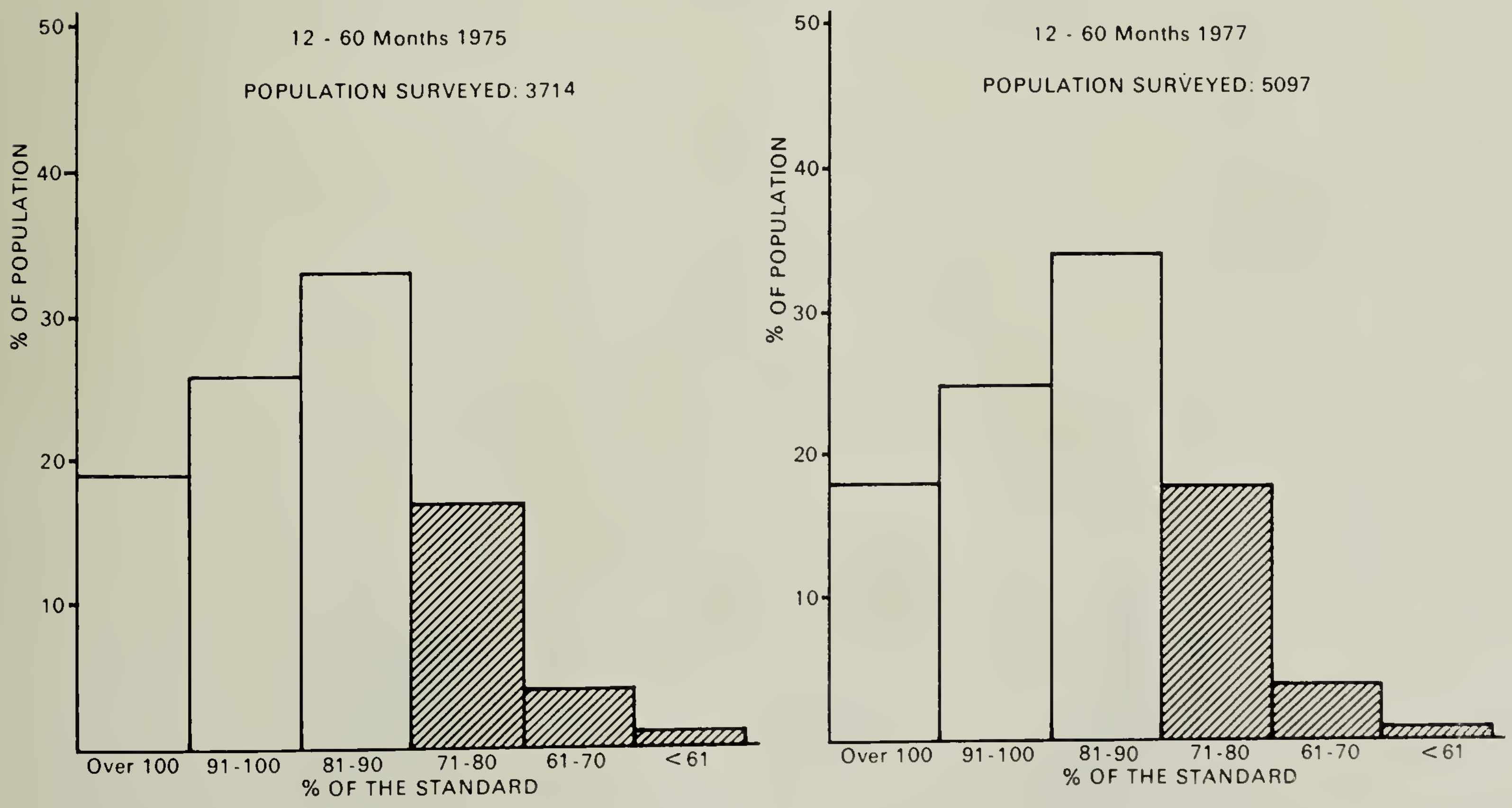

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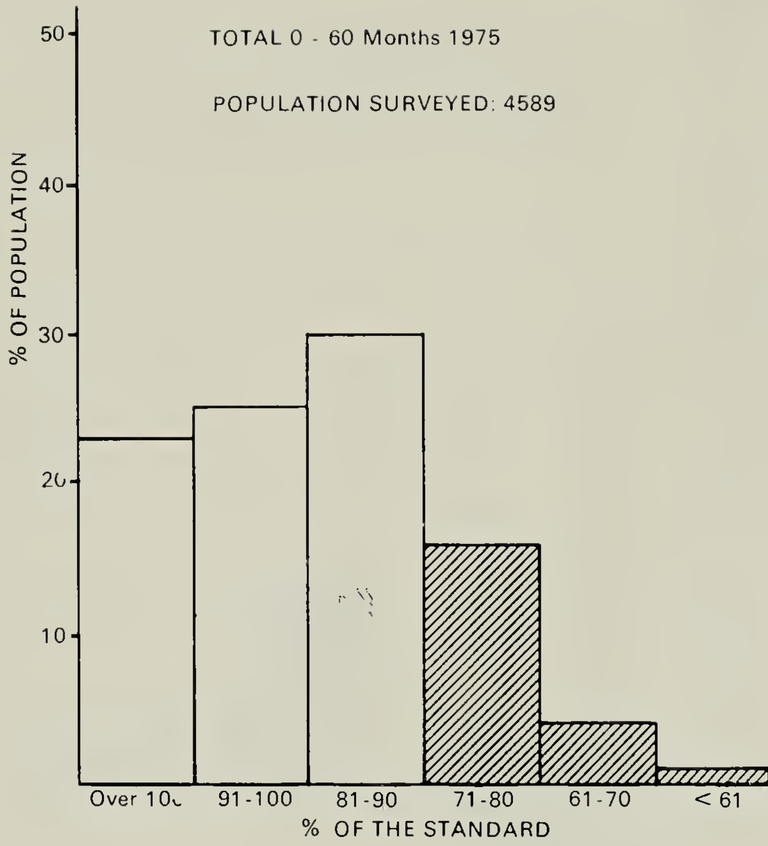

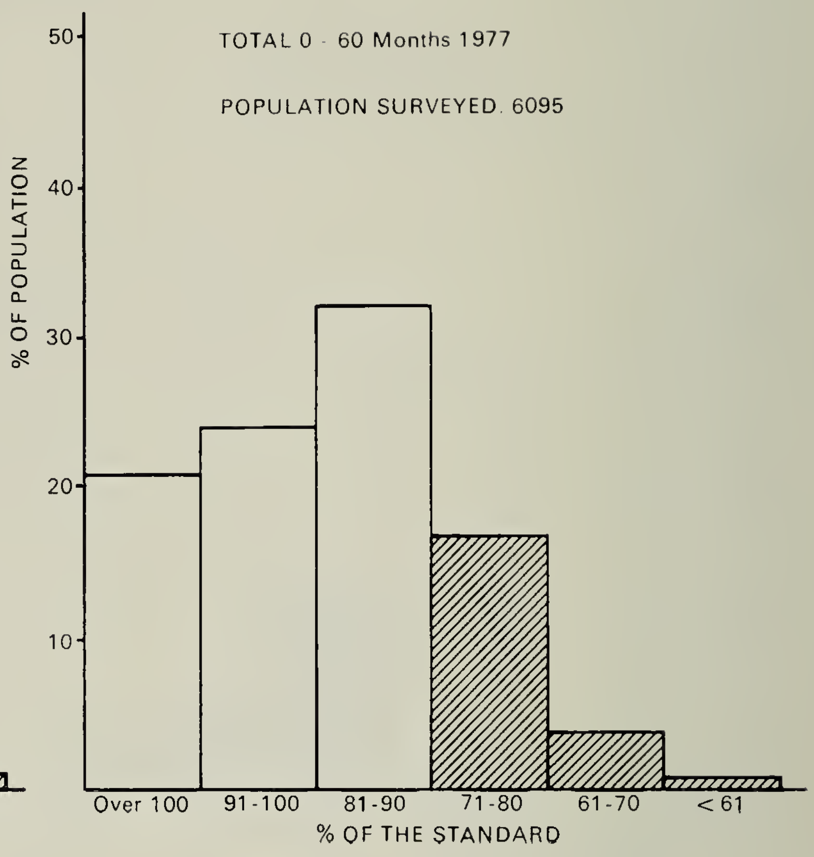

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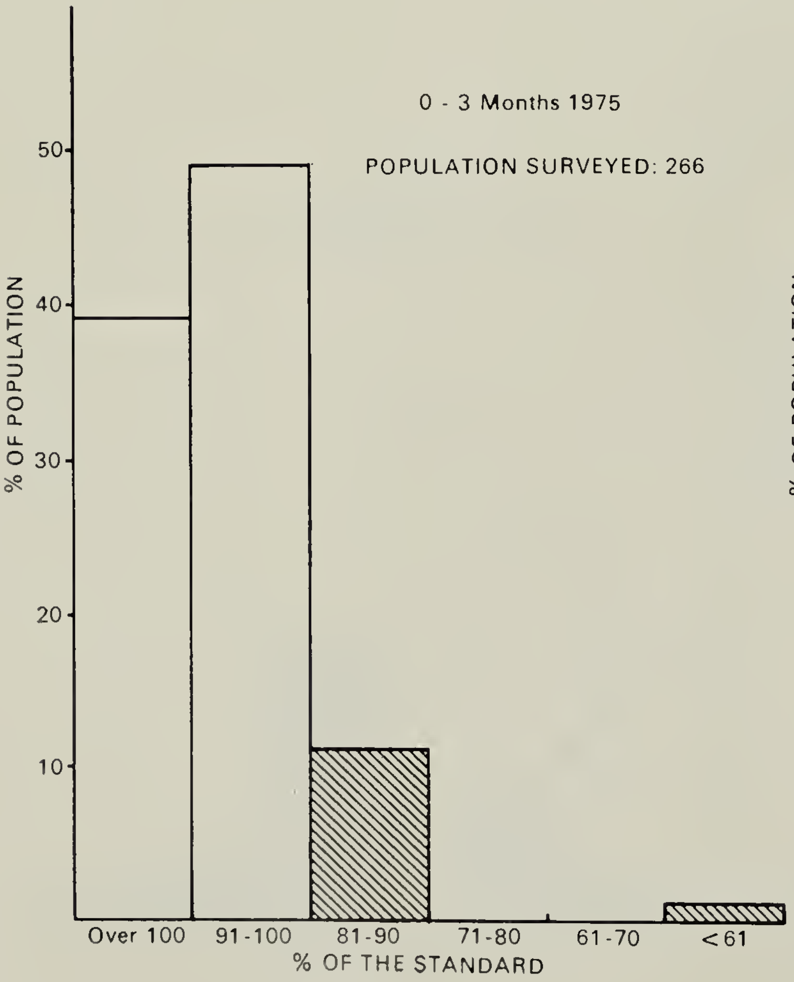

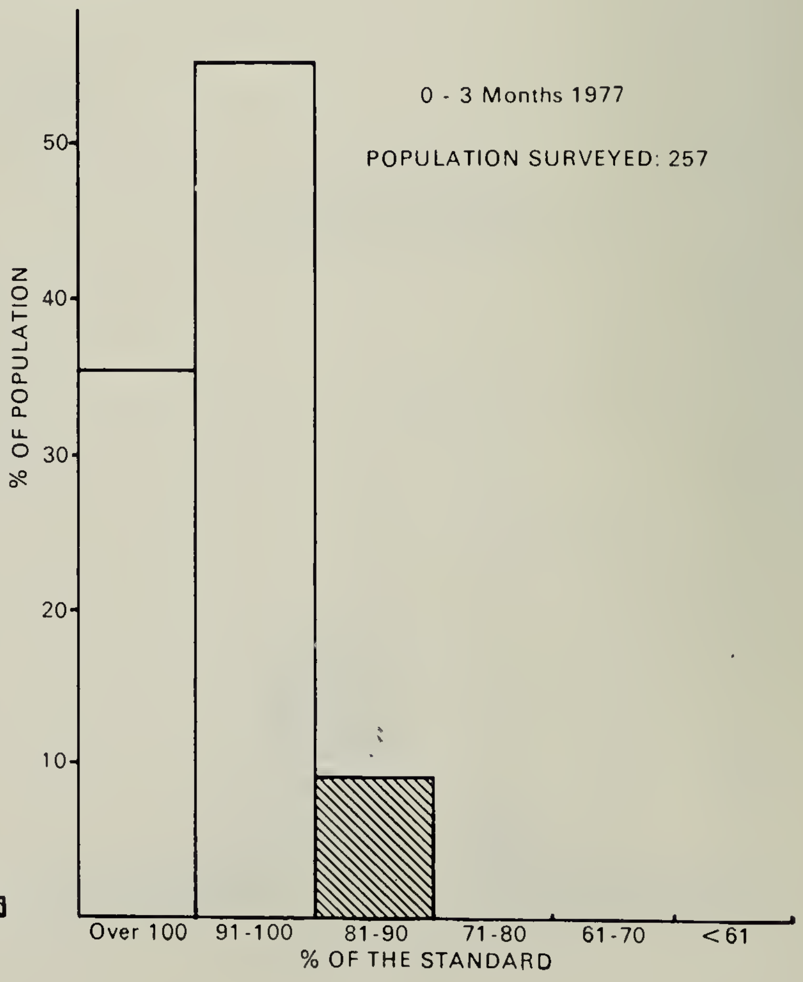

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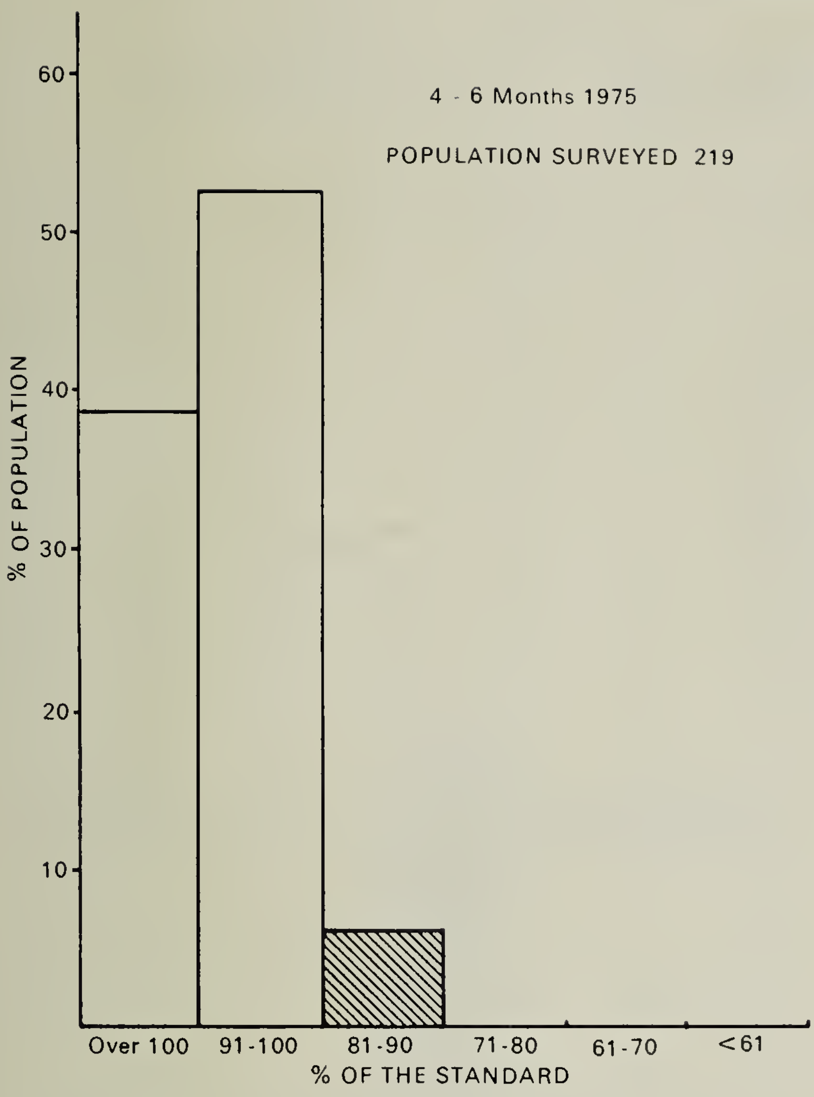

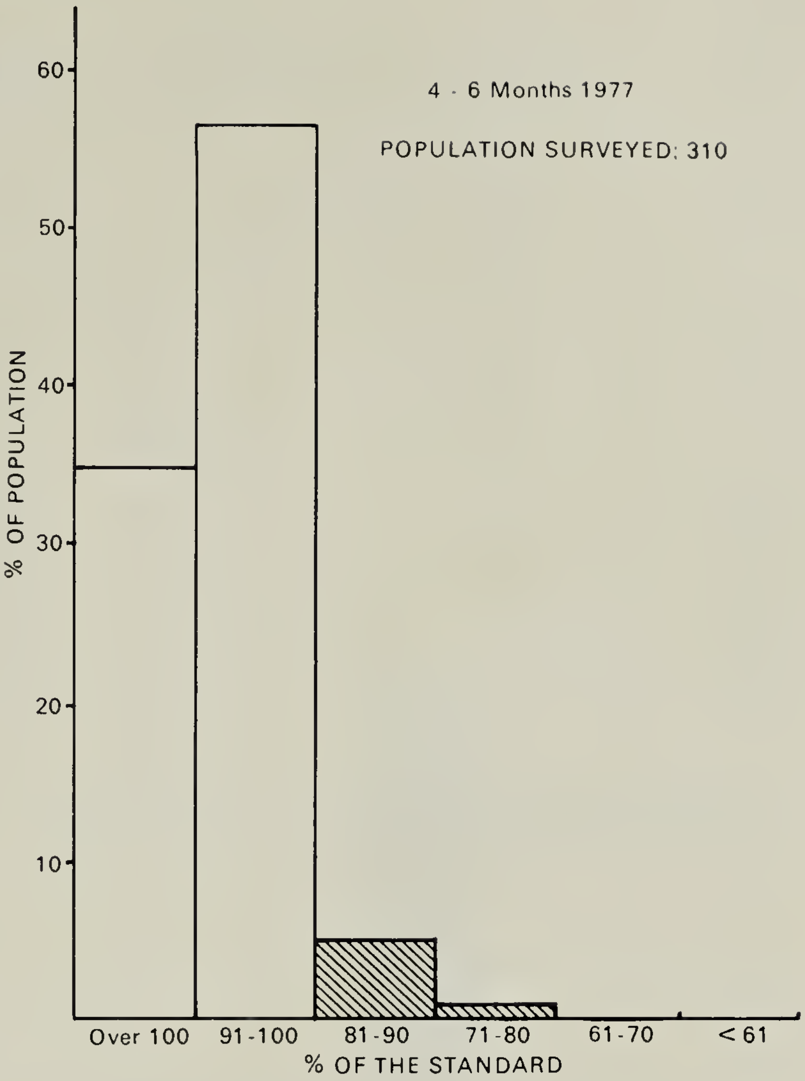

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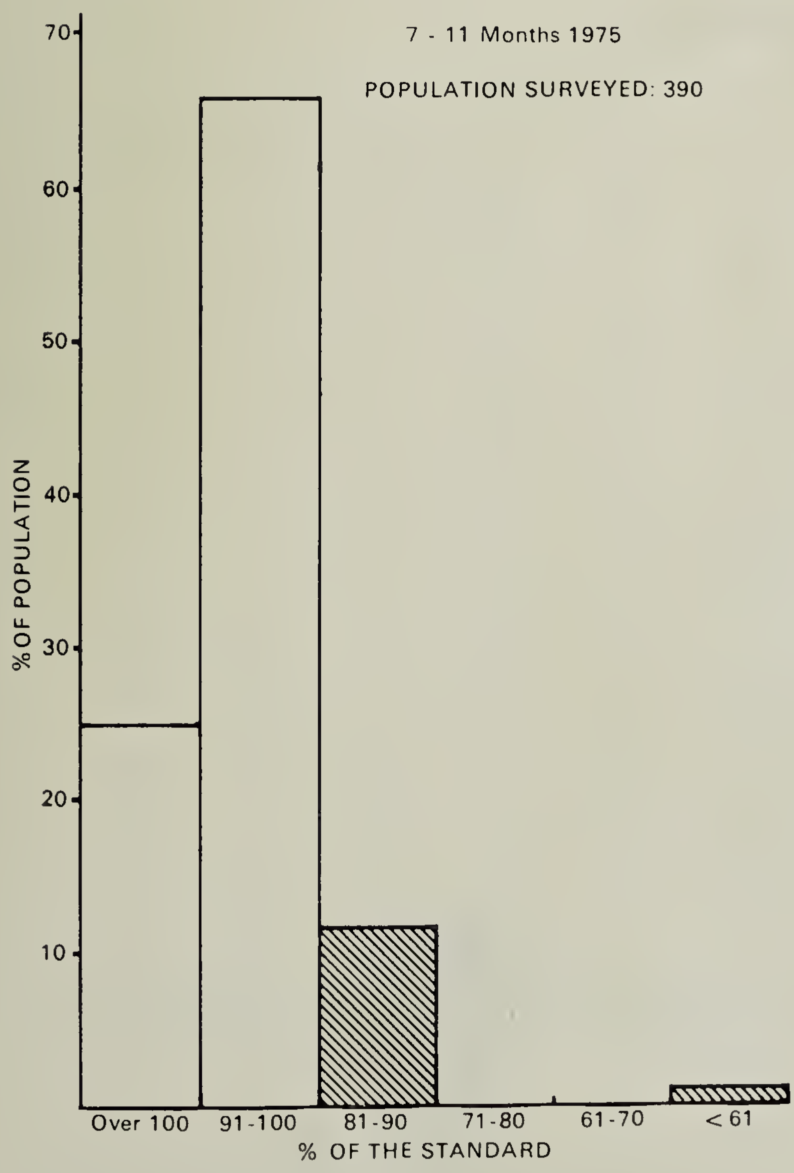

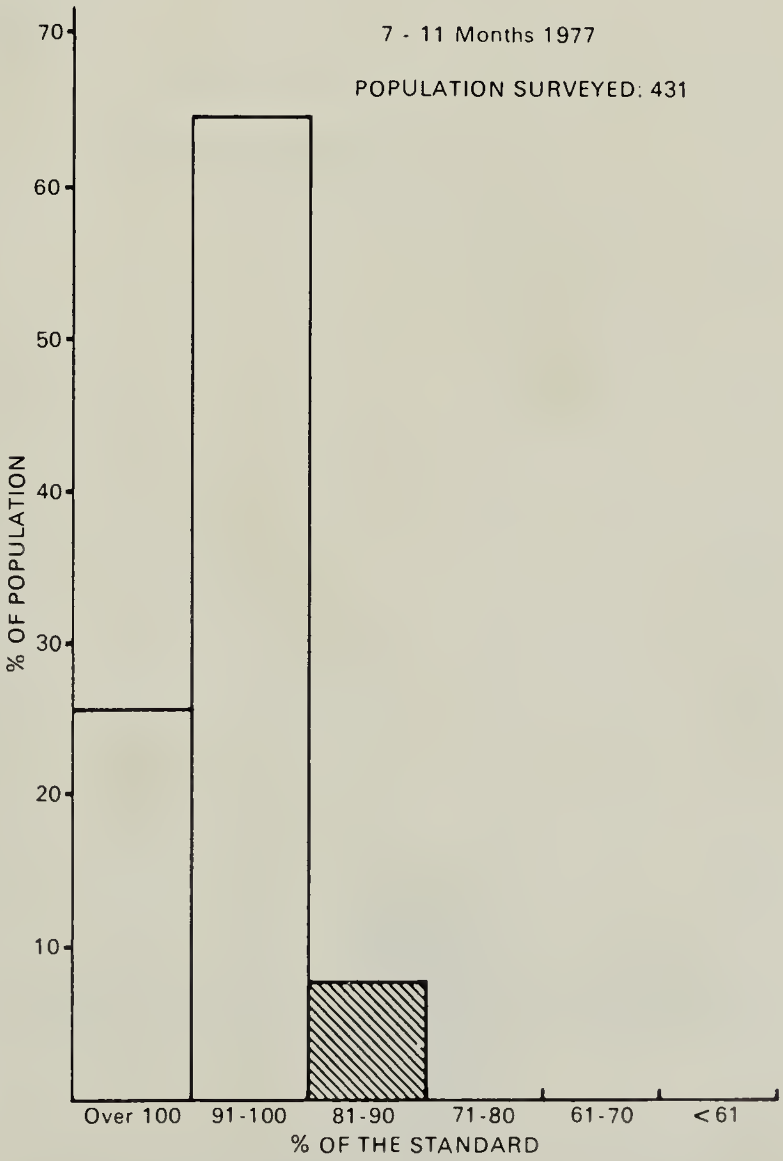

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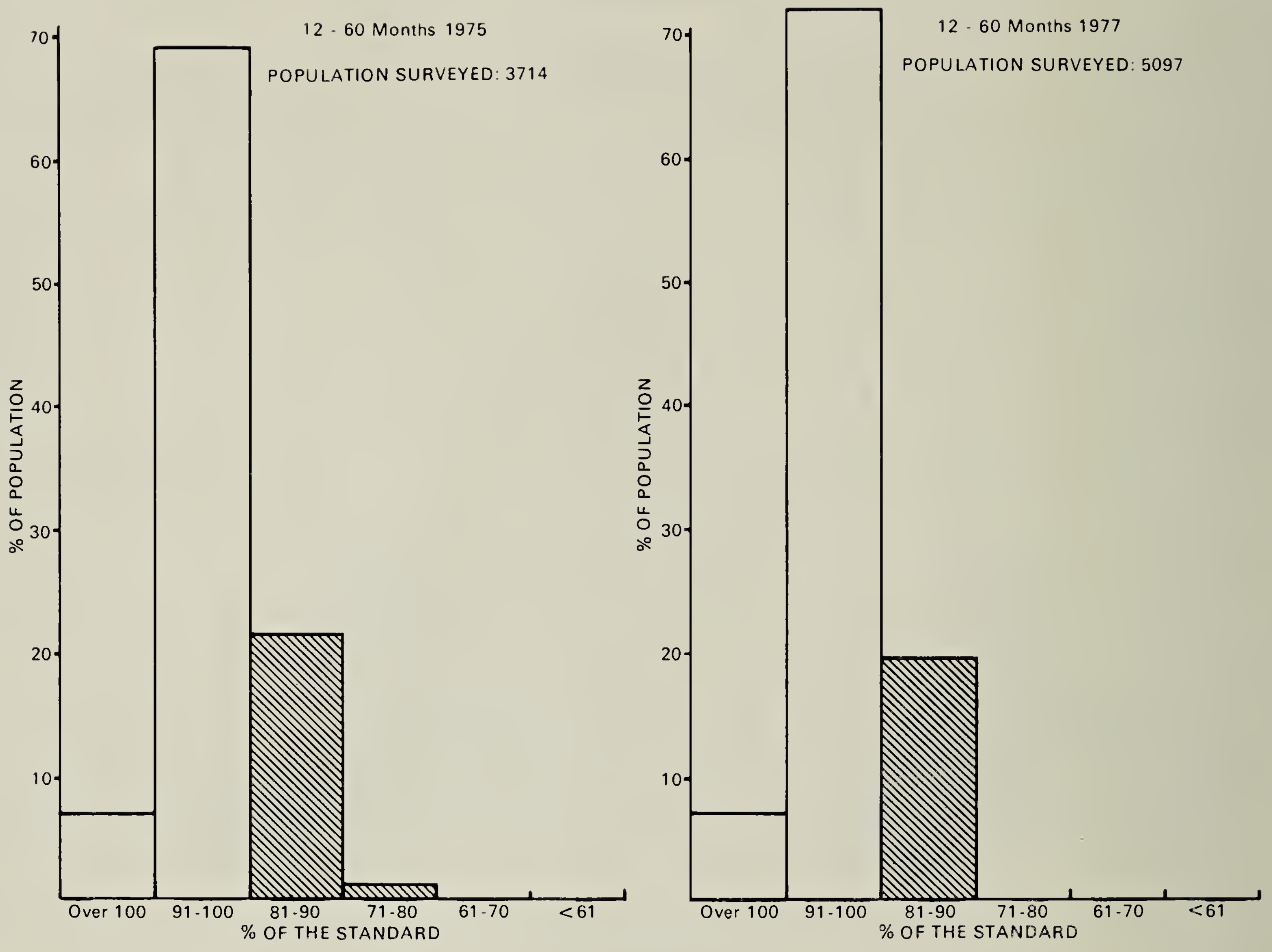


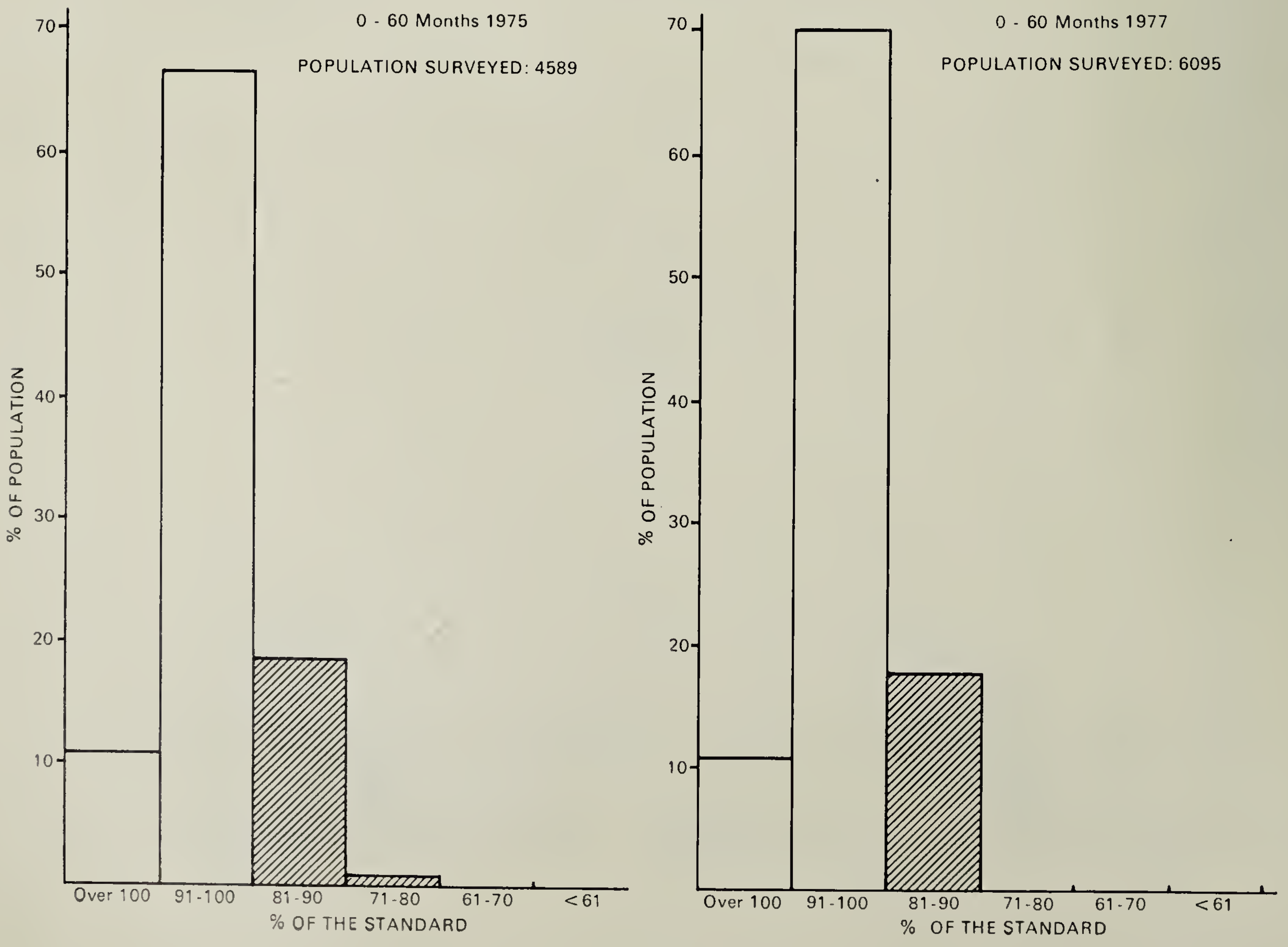
12 - 60 Months 1975

POPULATION SURVEYED: 3714

12 - 60 Months 1977

POPULATION SURVEYED: 5097

LENGTH FOR AGE



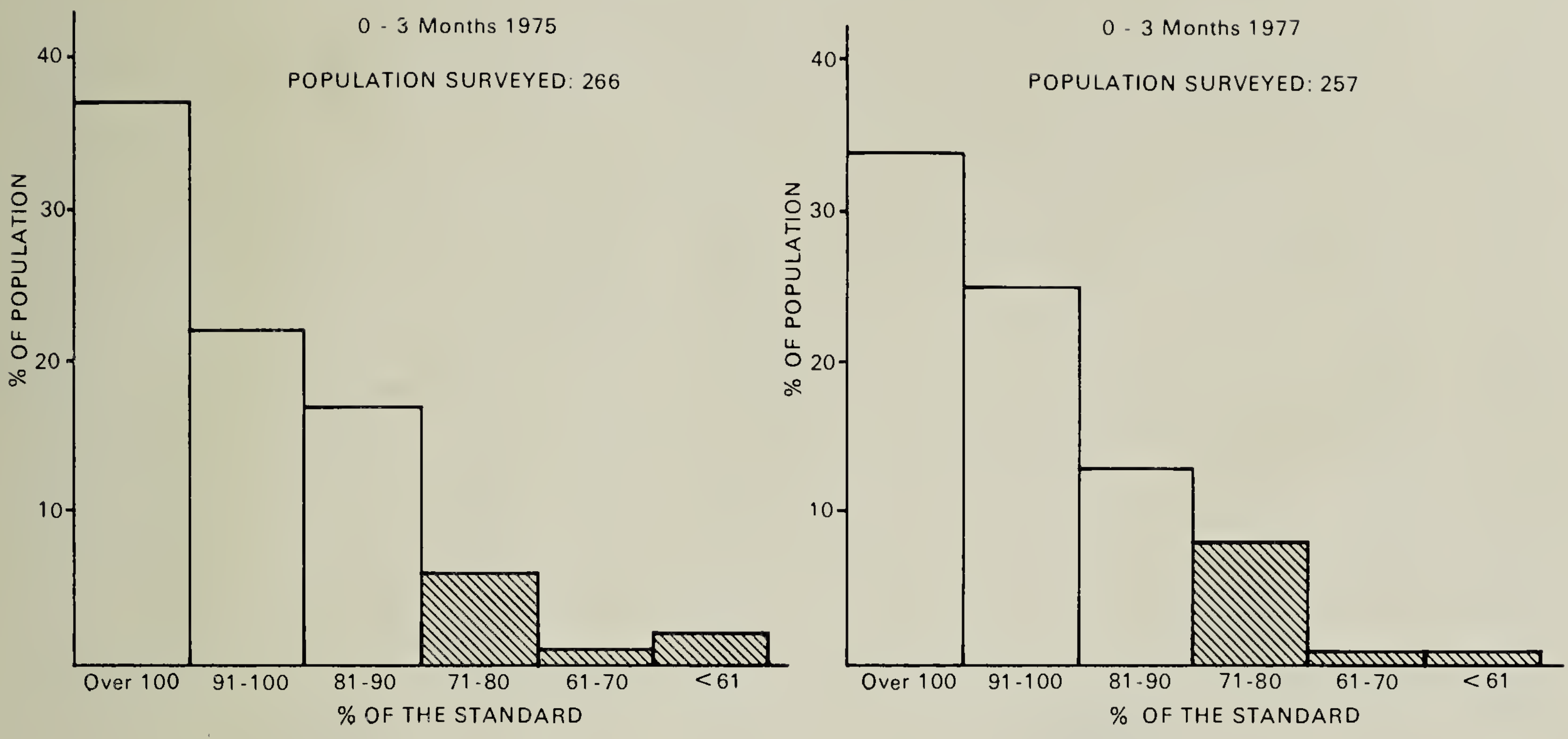
0 - 60 Months 1975

POPULATION SURVEYED: 4589

0 - 60 Months 1977

POPULATION SURVEYED: 6095

WEIGHT FOR LENGTH



0 - 3 Months 1975

POPULATION SURVEYED: 266

0 - 3 Months 1977

POPULATION SURVEYED: 257

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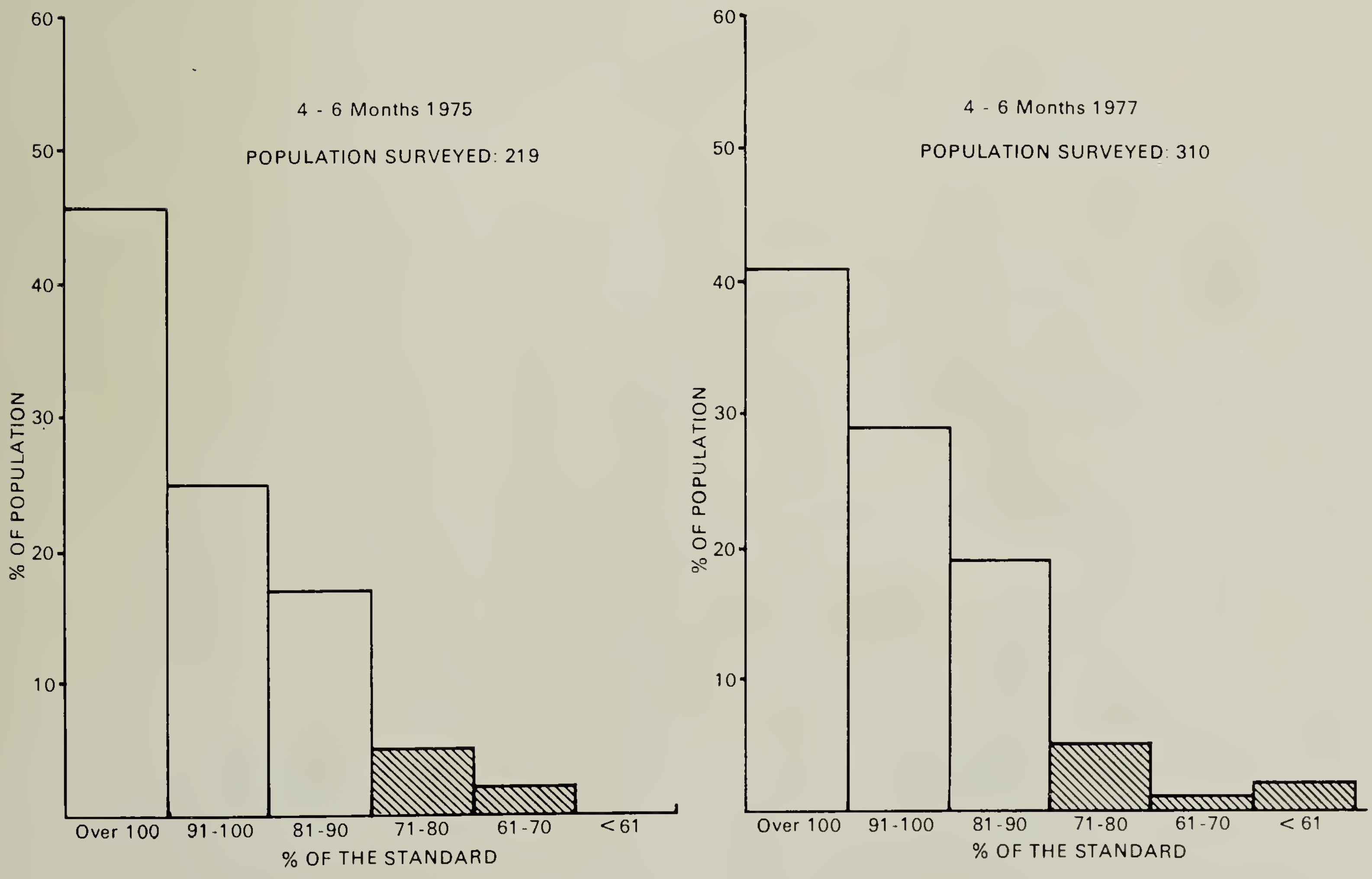


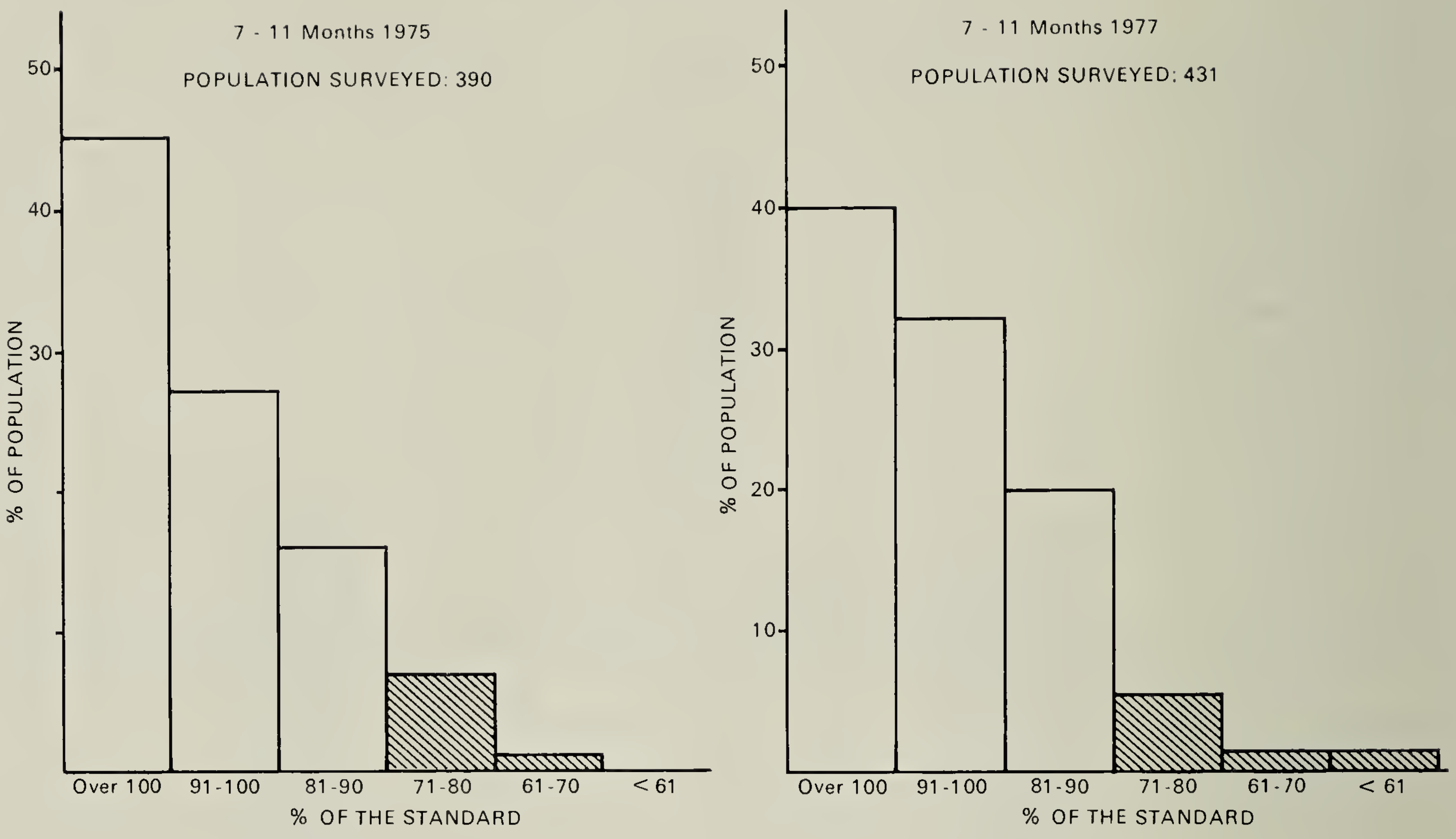
4 - 6 Months 1975

POPULATION SURVEYED: 219

4 - 6 Months 1977

POPULATION SURVEYED: 310

WEIGHT FOR LENGTH

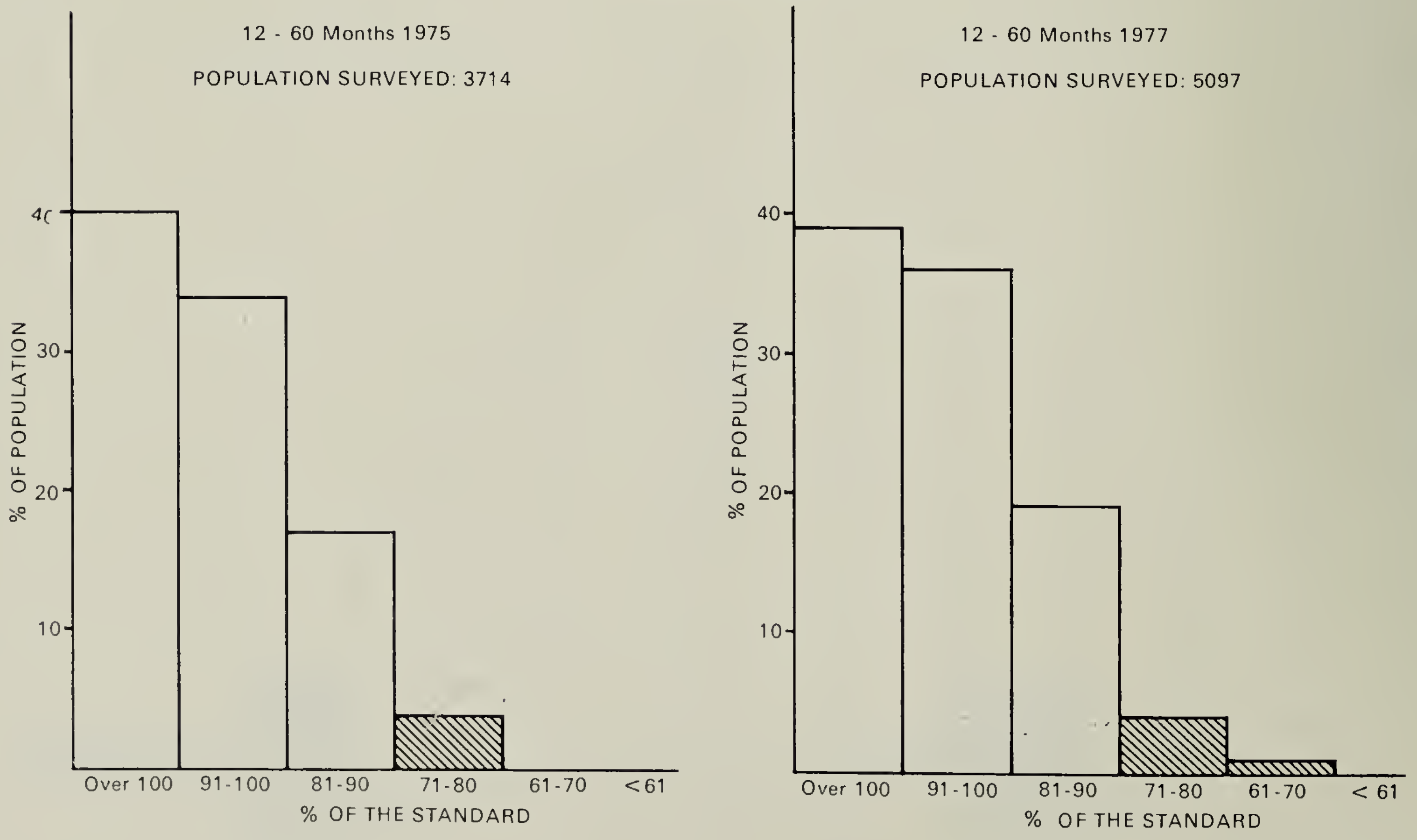

7 - 11 Months 1975

POPULATION SURVEYED: 390

7 - 11 Months 1977

POPULATION SURVEYED: 431

WEIGHT FOR LENGTH

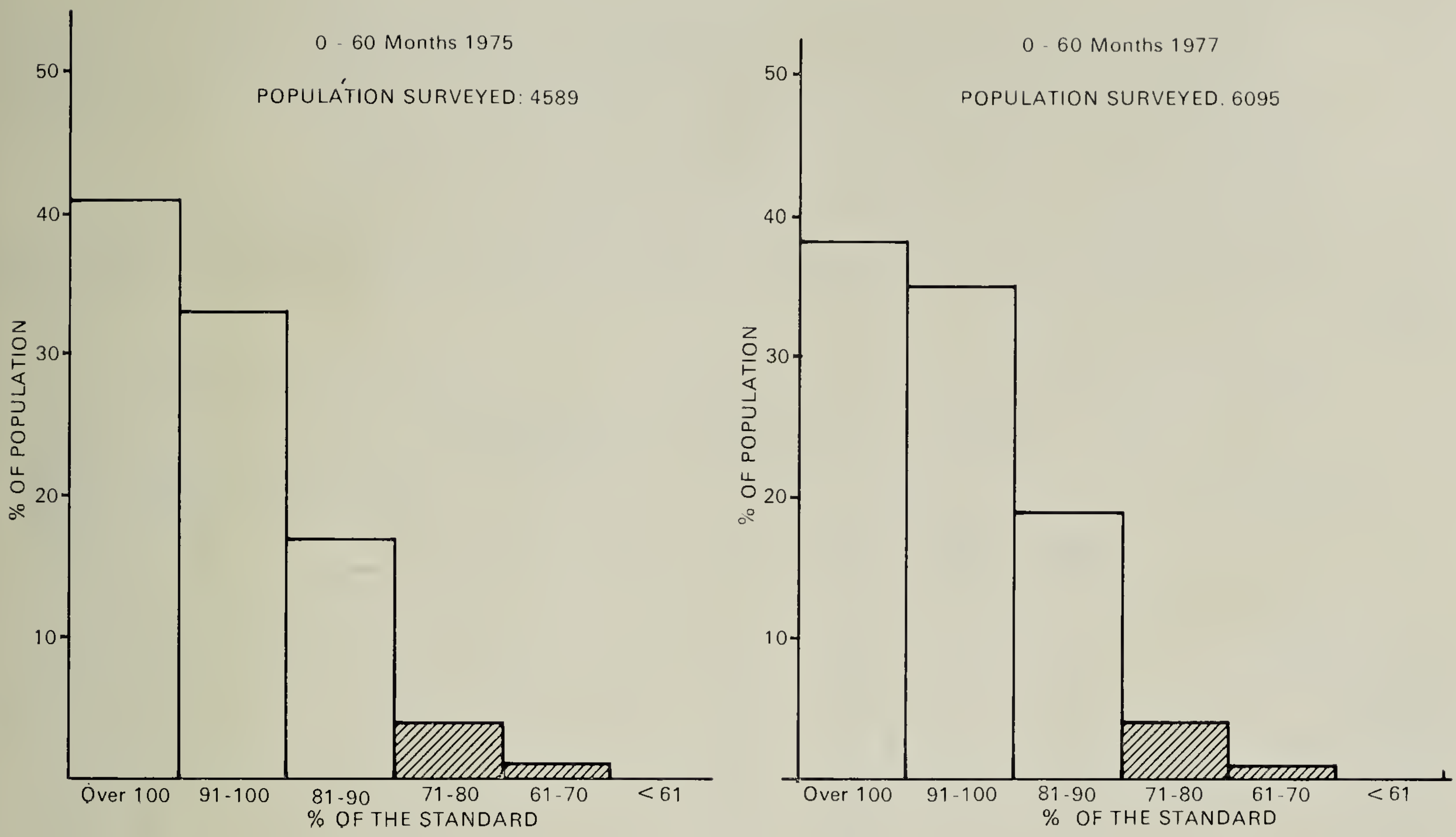

12 - 60 Months 1975

POPULATION SURVEYED: 3714

12 - 60 Months 1977

POPULATION SURVEYED: 5097

WEIGHT FOR LENGTH



7. TRACHOMA

The National Trachoma and Eye Health Programme in co-operation with this branch of the Public Health Department and the W.A. College of Ophthalmologists continued surveys in the Goldfields, Northern sector of the Southwest Region, Northern, Pilbara and Kimberley Regions.

7.1 The objectives of the National Trachoma and Eye Health Programme are:

The elimination of trachomatous blindness in Australia.

The presentation of the ocula health status in rural Australia to interested agencies.

The provision of immediate eye care to persons in rural Australia.

The establishment of immediate eye care to persons in rural Australia.

The training of medical, paramedical and interested persons in the skills necessary to provide eye care in rural Australia.

In the Kimberley, 6 108 Aborigines and 1 488 Non-Aborigines were seen, and in the Pilbara 2 427 Aborigines and 1 058 Non-Aborigines were examined.

The incidence of trachoma was found to be low amongst the white population but amongst the Aborigines, it ranged as high as 70 per cent in the under 21 age group in some communities.

Four hundred and five people were identified as requiring surgery.

7.2 Details of the findings for the Pilbara are given in Table 3.

7.3 Systemic chemotherapy in the form of trimethoprim and sulpha (Septrin) was given orally to communities with an incidence of over 20 per cent infectivity and supervised by local community leaders, field nurses and in some cases students. There was a high compliance rate.

A high refusal rate to attend for surgery unfortunately occurred in remote areas such as Warburton and Cundeelee. These areas are being followed up by local workers in conjunction with visiting ophthalmologists from Perth.

7.4 Moora

The screening programme for trachoma in a town in the South West was conducted by this service in collaboration with Professor Ian Constable (Professor of Ophthalmology at the University of W.A.), Dr. Peter Graham and Dr. R. Cooper, with Professor Ida Mann available for consultation. One hundred and forty-three Aborigines were examined.

Figures for the Pilbara Trachoma Survey are contained in the following table.

Data extracted from National Trachoma and Eye Health Programme Preliminary Report.

TABLE 3

Community	People Seen		Aboriginals with Follicles		Non-Aboriginals with Follicles		Total Glasses	Surgery	Total Ophth. Actions	Aboriginal Blindness Rate
	Aboriginal	Non-Aboriginal	<11y	<21y	<11y	<21y				
			%	%	%	%				%
Port Hedland	737	679	22	16	2	2	42	18	176	5·2
Strelley	339	8	81	66	0	0	58	16	124	2·9
Yandeyarra	173	5	73	52	0	0	21	10	62	1·7
Marble Bar	130	55	46	39	8	3	19	7	42	7·7
Onslow	212	55	73	64	0	0	33	7	52	1·4
Yarraloola *et al*	32	4	40	17	....	....	4	2	5	0
Roebourne	382	154	51	38	2	1	48	20	92	1·8
Nullagine	61	42	56	50	19	20	2	2	19	0
Jigalong	306	25	83	70	0	0	29	16	66	3·3
Wittenoom	55	31	85	67	6	7	9	....	14	0

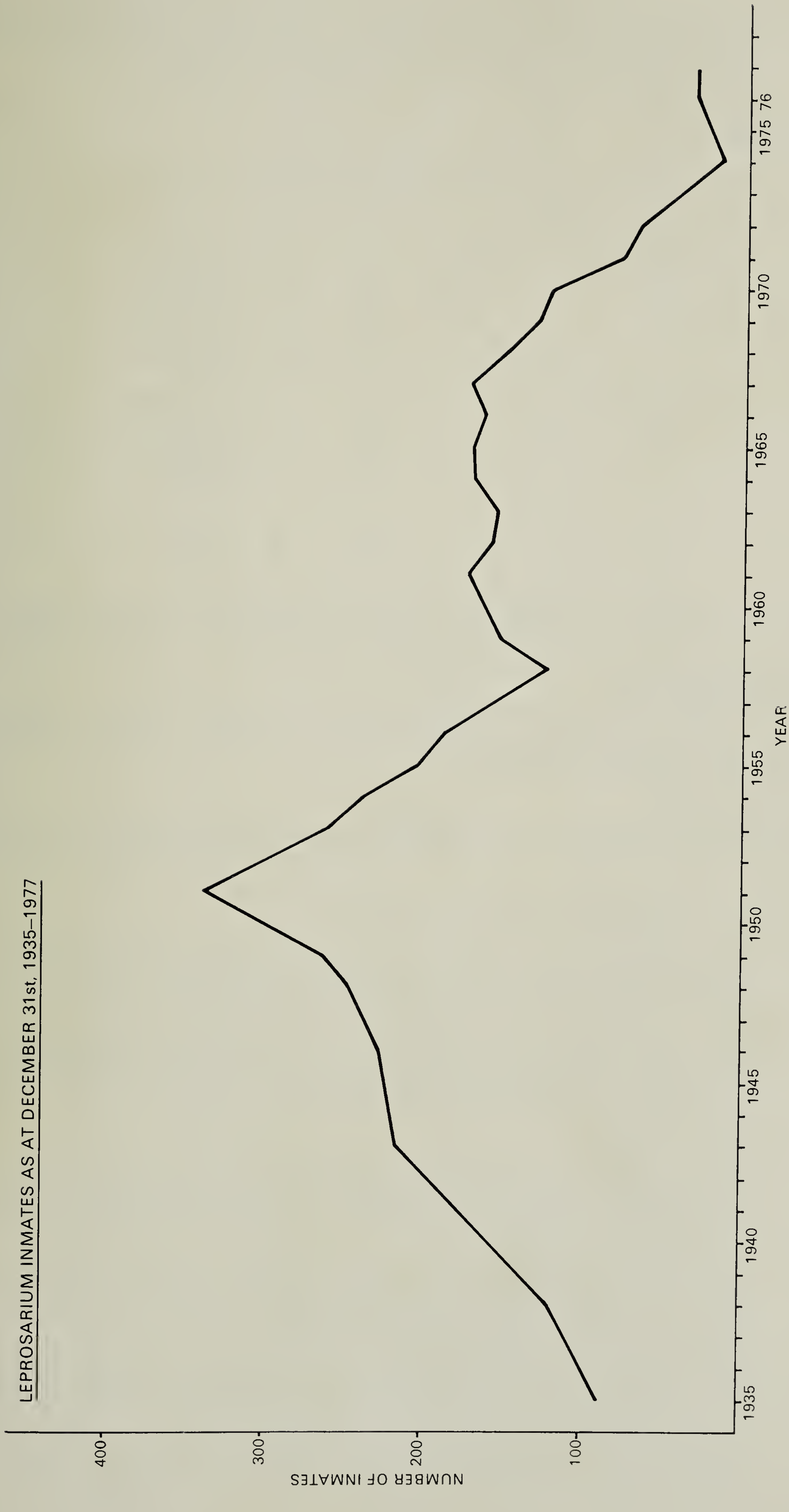
7.4.1 *Overall Results*

Follicles	32 (22·4%)
Old Trachoma Scarring	49 (34·3%)
No Signs of Trachoma, Old or Recent	62 (43·4%)
Number with Diminished Vision	3 eyes
Surgical Actions (lid surgery for trichiasis)	3
Primary or Secondary Bacterial Conjunctivitis	3

Seventy-five per cent of the local population were screened and the results are representative of the current situation. The survey was of particular interest because of previous surveys dating back to 19th December, 1953, when Dr. Graham and Professor Mann screened the district. At that time the Moora Reserve was in poor condition and of 29 people screened 62·1 per cent had trachoma, and 10 patients (30 per cent) were active. Over the last 25 years mass treatment has been given, as well as sporadic treatment for all those with active disease. More importantly, a very laudable housing programme has been effected in the town. Unfortunately, although by 1973 only four families were awaiting houses there has been a large migration of Aborigines to Moora, and these new people now occupy the old Reserve. Another point of interest is the apparent rapid increase in birth rate amongst those housed in the intermediate area or in the town itself.

Twenty-four active cases were clustered in eight families. The other six cases occurred in individuals in six families, all of whom had signs of old trachoma. On the other hand, there were another five families with twenty-five trachoma-free members, and only three members with signs of trachomatous scarring. In these families there were no active cases. The incidence of purulent conjunctivitis would appear to be less than in 1953.

Even the Reserve facilities of running water and ablution are vastly improved, there being taps to every house and adequate washing facilities. It would not seem possible to house all people in the area while newcomers migrate to the Reserve from other districts. (Extracted from Professor Constable's report).



LEPROSARIUM INMATES AS AT DECEMBER 31st, 1935–1977

Treatment with Septrin orally and terramycin ointment topically was given to the whole group and their families. It is hoped in 1978 that the Reserve will be closed and families accommodated in standard housing.

A re-screening programme will be conducted in 1978.

8. HANSENS

HANSENS NOTIFICATION 1977

Type	Sex	Age	Location
Tuberculoid	M	44	Kimberley
	M	20	Kimberley
	M	40	Kimberley
	M	16	Kimberley
	M	28	Kimberley
	F	25	Kimberley
	F	17	Kimberley
	F	40	Pilbara
Borderline	M	21	Kimberley
	M	45	Kimberley
	M	17	Pilbara
	F	26	Kimberley
	M	11	Pilbara
	F	43	Pilbara
Lepromatous	M	36	Kimberley
	M	20	Perth
	M	66	Pilbara

Dr. W. Davidson continued as Consultant Leprologist for the Public Health Department and Dr. Spargo as Medical Superintendent of the Derby Leprosarium.

Metropolitan Clinic

Four hundred and sixty-five persons attended 49 clinics during the year. Four hundred and thirty-three students checked at hostels. Checks conducted on Vietnamese migrants (referred).

Northern Areas

Surveillance continued in the susceptible areas by pre-school, school and community checks. Thirty-six patients were at Derby Leprosarium as at 31/12/77.

9. SEXUALLY TRANSMITTED DISEASES

9.1 State figures from notifications of sexually transmitted diseases do not include racial origin (these figures will be published by the State Venereologist in another section of the Public Health report.)

The following is extracted from Dr. Alan Finger's (Venereologist) report of an audit conducted in the Kimberley and labelled Community A. It is an index of the magnitude of the problem particularly in the North West and Goldfields Regions of this State.

9.2 Data Collection

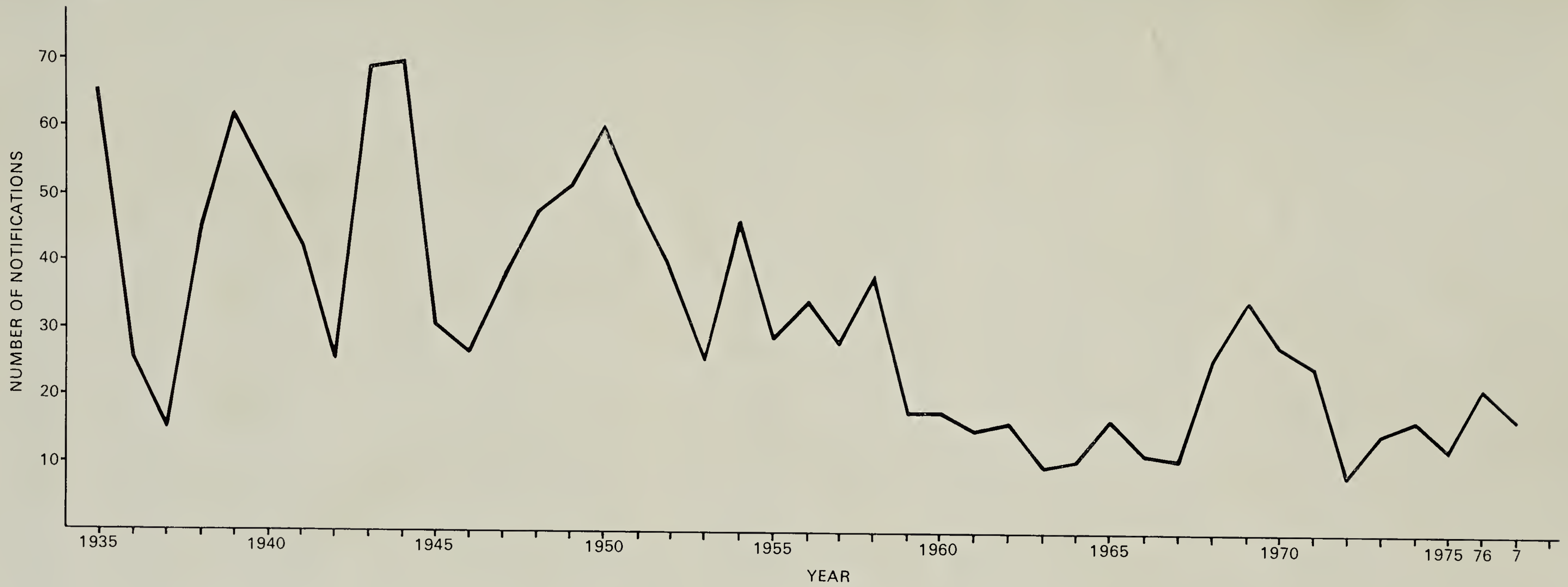
All persons were inspected by the doctor for skin, mouth and genital lesions. Children were examined for stigmata of congenital lesions. Adults were examined for sabre tibiae and for neurological, cardiovascular and other evidence of late syphilis.

The children, adolescents and younger men and most older men co-operated well. A small proportion of the older men objected to any genital inspection and in these, examination was not attempted.

The females were examined by Dr. Sarah Gome, a local practitioner, who was well known and accepted by the Aboriginal women. Examination was not conducted in those who refused examination. One hundred and ten females had endocervical swabs collected.

All laboratory tests such as D.G.I. serology and cultures were done by the W.A. State Health Laboratories.

INFECTIOUS DISEASE (HANSEN'S DISEASE) NOTIFICATIONS 1935-1977



9.3 Findings—Gonorrhoea

All adolescent and adult males had a history taken for penile discharges or sores. Some, especially the younger ones freely told of past treatment presumably for gonorrhoea and were aware that they should seek treatment for any discharge or sores. Only four had obvious discharges which were proved to be gonorrhoea. The patients were aged 16, 26, 29, and 47.

Prevalence rate two per cent (175 males in the 15–49 age group).

Seven gonococcal endocervical infections were found among the 110 females from whom swabs were collected, 2 of whom were aged 15 and 17 years old.

Prevalence rate seven per cent (110 females examined).

9.4 Syphilis

Several children were seen with superficial, impetiginous sores mostly on the lower limbs, often post traumatic and sometimes of long standing. No lesions were seen typical of yaws.

One girl approximately two years of age had been treated for a syphilitic lesion apparently a condyloma some six weeks previously and had small rounded dipigmented areas on the vulva.

No child, adolescent or adult was seen with any of the various stigmata of congenital syphilis and the dentist found nobody with Hutchinson's teeth or mulberry molars.

A few men had superficial penile scars but no active penile lesions or chancres were seen. No evidence of secondary syphilis was noted.

One 67-year-old man with a VDRL titre of 1 in 2 and 3+ FTA ABS was diagnosed with aortic incompetence by an audit physician.

No cutaneous lesions of yaws and no bony lesions other than sabre tibia were noted. Nineteen men and two women were recorded with sabre tibia ranging from slight to extreme. None were found in anyone younger than 30 years.

9.5 Serology

Sero-reactors were classified along the following criteria:

Active cases: Those with a VDRL titre 1:8 or greater and FTA ABS also positive.

Uncertain or inactive: Those with a positive VDRL titre below 1 in 4 and FTA ABS positive. (In this category will be some early infections and those with previous infections which are inactive.)

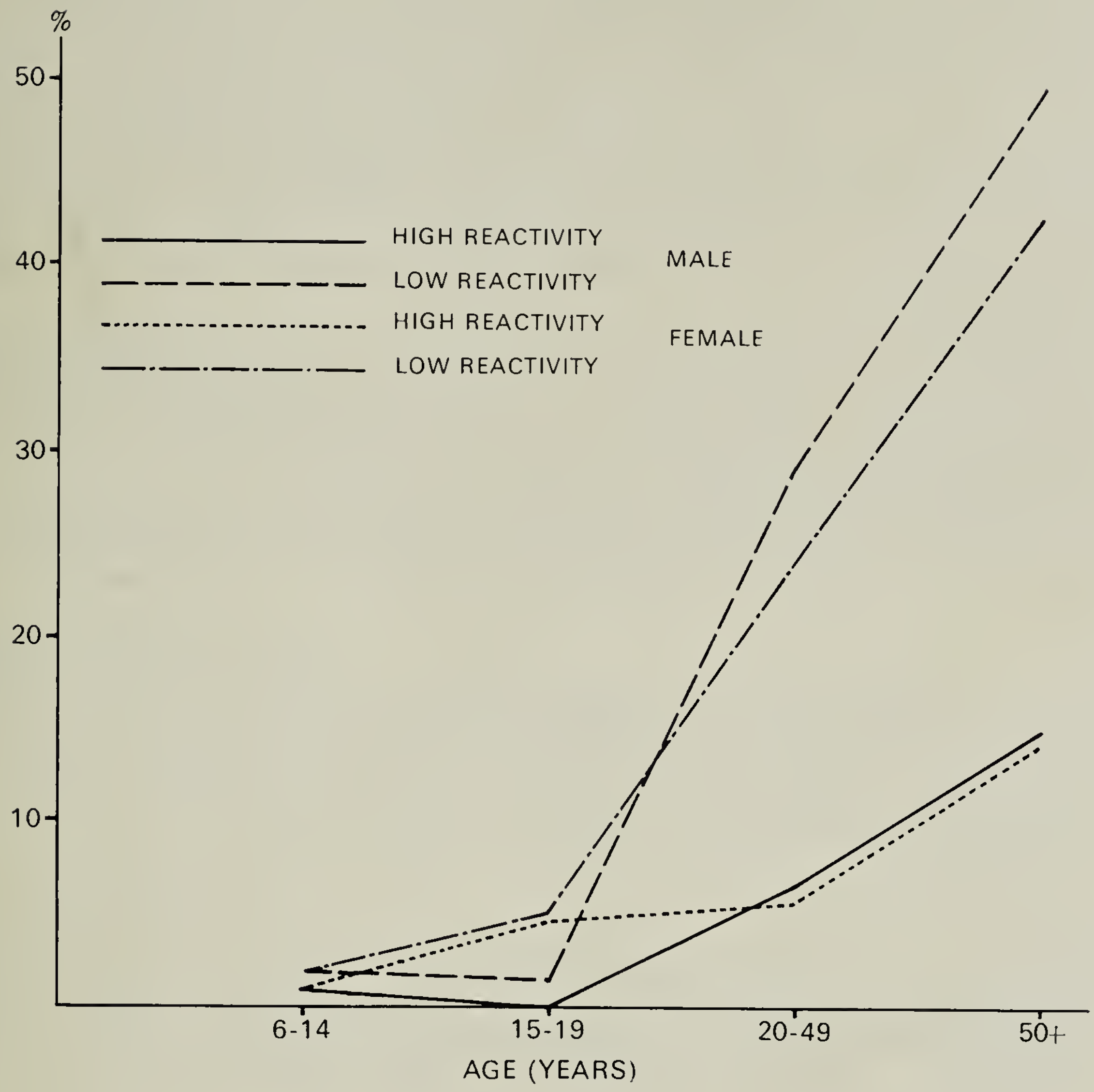
COMMUNITY A—JULY 1977

	Male	Female	Total
	%	%	%
1. Non-Reactive	75 (286)	79 (278)	77 (564)
2. Reactives—FTA (ABS) and VDRL 1 in 4 or less	20 (74)	16 (58)	18 (132)
3. Reactives—FTA (ABS) and VDRL 1 in 8—1:128	5 (19)	5 (18)	5 (37)
Total	100 (379)	100 (354)	100 (733)

1. Non-Reactive—No Treponemal Infection.
2. Reactive at low levels—Active Infection Uncertain.
3. Reactive at High Levels—Active Infection likely.

Five per cent of those tested had serology consistent with active treponemal infection. More males (20 per cent) than females (16 per cent) overall (18 per cent) had serology indicating past infection.

% POPULATION REACTIVE TO SEROLOGY TESTS BY AGE
COMMUNITY 'A'



The highest rates of both active and inactive infections were indicated in the adults and were more marked in the over 50 age group, with males 47 per cent against females 36 per cent. However, in the sexually active group 15–49 years, the rates were 36 per cent with males 34 per cent and females 38 per cent.

9.6 Discussion

No evidence of congenital syphilis was found nor was there any evidence of yaws under 30 years. In the children less than 15 years that were sero-active clinical signs resembling venereal syphilis were found and in most cases other family members were also sero-positive. These young children and the existing environmental conditions of poor housing, poor hygiene, often lack of clothing in a hot, humid climate and close skin contact are suggestive that transmission is by skin to skin contact from infected adults. (Jacobs, D. S. MJA, Jan. 1978, Syphilis in Australian Aborigines in Northern Territory). However, in the 15–19 age group, the increasing incidence is probably venereal in origin and follows the Australian and world patterns of high incidence in this group.

Venereal syphilis occurs in the adolescent and older age group as has been evidenced by chancres and secondary rashes occurring in other examinations. Congenital syphilis will have to be watched for, particularly as 38 per cent in the sexually active—reproductive (15–49 years) period showed evidence of positive serology.

With frequent usage of antibiotics in the past 30 years and no clinical evidence in the under 30 age group it is apparent that yaws is not an issue.

10. DENTAL HEALTH

10.1 Dental caries and periodontal disease in the adult is a major cause of concern in Aboriginal communities. (See oral health report).

The Dental Health Services has dentists based in most major centres in the North. These dentists make visits to some outlying areas. In the South West provision of dental services is by private dental practitioners. Remote communities have a visiting service provided by itinerant dentists—one employed during 1977 by this service who travelled by road. An aero-dental service to the Central Reserves, remote areas of the Goldfields and Kimberley has been provided by Flying Dentist, Mr. Ian Alderdice for some years.

Dental therapists are now providing a service in an increasing number of high schools.

Although dental services to remote areas are not optimum the past few years has seen an improvement in that every individual has an opportunity to see a dentist. A greater degree of time spent on dental education of communities is necessary in the future.

SUMMARY OF STATISTICS OF MR. DAVID FRIEND (ITINERANT DENTAL SURGEON'S REPORT)

Location	No. Examined		Conserv. Ops.	Extractions	Prophylaxes
	Children	Adults			
KIMBERLEY—					
Fitzroy Crossing	383	17	197	23	2
Halls Creek	386	49	244	19	11
Looma/Camballin	99	16	24	31	3
PILBARA—					
Jigalong (X2)	301	83	123	42	20
Strelley*	2	32	....	14	5
Port Hedland (3 mile reserve)	17	11	20	13	....
Marble Bar	143	23	108	14	8
Nullagine	35	7	19	1	2
Yandeyarra	73	23	52	13	4
NORTHERN—					
Kalbarri (X2)	169	98	147	6	32
Denham (X2)	98	42	97	11	15
Useless Loop	29	16	18	9	6
Meekatharra (X2)	448	228	434	80	44
Cue (X2)	137	47	99	21	36
Mt. Magnet (X3)	169	125	228	48	23
Yalgoo	36	20	33	2	4
SOUTH WEST					
Mogumber	15	4	5	1	....
New Norcia	180	....	48	1	....

* Low figures due to mustering season.

11. ALCOHOLISM

In a study conducted by Mrs. Carol Reed (Anthropologist, W.A. University) for the Service looking at attitudes of Aborigines to health in the South West of the State, results showed that there was great concern about the problems caused by excessive drinking. Information on where to seek help was vague and indefinite, and most felt that there ought to be special places for help in overcoming drinking problems.

Ideas on programmes to prevent, treat and cure the problem included availability of someone to talk with about problems, the provision of activities to keep one away from drink and a treatment centre available for voluntary participation where people should be free to come and go as they wished.

Some communities now impose bans on alcoholic drinks. Others have introduced a rationing system or select one evening a week when drink is available. A Committee of Aborigines (Kulila) was formed in Perth with Government Department Officers as advisors to co-ordinate preventive and rehabilitative programmes. It is envisaged to have a rehabilitative centre opened in Wandering in 1978.

As has been stated earlier in the report most of the Assistants and Aides in the service have been through a training programme with the Alcohol and Drug Authority and have been actively engaged in counselling and setting up "dry" groups. Such groups exist in Kununurra, Fitzroy Crossing, Broome, Kalgoorlie, Pinjarra and Perth. Two Assistants have activity groups, one with a nucleus of young men who have started a football club, and another with handcrafts.

12. ANTENATAL AND POST NATAL CARE

Most women now perceive the need to have antenatal care and are attending at an earlier period—with all deliveries being conducted in hospital. (No figures available on births at time of writing this report.)

13. IMMUNISATION

Triple Antigen and Sabin coverage for children under 1 year is estimated as over 85 per cent in Aboriginal communities. Although much was done to improve the status for measles the vaccine coverage is still far from adequate in the 1–10 year age group. The main cause being the difficulties encountered due to the lability of the vaccine.

14. SCHOOL MEDICALS

Full medical examinations were conducted in all schools north of the 26th parallel by staff of this section and in other areas medical officers were available for referrals. Staff were also involved in hygiene checks for pediculosis, scabies and Hansens. Staff were also involved in Health Education Programmes.

15. MINOR AILMENTS

Management of cuts, bruises, sores, pediculosis and scabies is being undertaken to a greater degree by families under the supervision of field staff. A greater awareness for dealing with these problems as they arise has been the result of education with a consequent diminution of hospitalisation.

16. EAR DISEASES

Chronic otitis media with discharging ears has been tackled with vigour under the direction of the Consultant Surgeon, Dr. J. Sunderman. Two nurses have had special training and have spent time in teaching parents and field staff on frequent ear toilets, removal of foreign bodies etc. The relationship of chlamydia with ear infections is being looked into.

17. ARTHRITIS FIELD NURSES

Two thousand one hundred and seventy-nine home visits were made by the three Field Officers. The role is to co-ordinate with general practitioners, community nurses, hospitals and the Rheumatologists in maintaining optimum well-being of clients in their own environment.

The majority of the patient load (65 per cent) is long term. Rheumatoid arthritis, chronic disabling osteoarthritis and ankylosing spondulitis form the greater number of conditions seen.

The area currently covered, stretches from Geraldton to Kalgoorlie and Esperance and west to Augusta, so much travelling is involved by the three sisters. It is anticipated that a Community Health Field Nurse based in Geraldton and another at Albany after some training will take over the after care in these areas with supervision from the more experienced Field Officers. The greater involvement of field staff will ensure not only a wider coverage for these disabling chronic conditions but also make for better total management and reducing the amount of travelling presently required.

18. REFUGEES

Refugees from Vietnam first arrived in W.A. in May 1977. These people arrived in small parties in small boats from camps in Malaysia and Thailand. Landfall was made on the northern coast of Western Australia and the people then transferred to Perth. Darwin later became the focal point of disembarkation. Towards the end of 1977 following selection of refugees for Australia by Australian officials in Malaysia and Thailand larger numbers were flown to Perth and initially accommodated at Graylands Migrant Hostel where a programme of orientation and rehabilitation to the Australian way of life was undertaken.

Medical checks were conducted in liaison with Commonwealth Health Authorities in some intakes at Woodman's Point (Quarantine Station) and in others at Graylands Hostel. After initial health screening the refugees were admitted to the hostel. To help with their process of acculturation a clinic was established at Graylands Hostel to facilitate immediate management of problems found at the initial screening and to facilitate a smooth transition to utilisation of normal available medical and health services.

18.1 Screening Procedures

18.1.1 *Full medical examinations*

Conditions particularly looked for:

- Hansens.
- Malaria.
- Tuberculosis.
- Sexually Transmitted Diseases.
- Intestinal Parasites.

18.1.2 *Ancillary investigations*

Laboratory:

- Malarial parasites.
- Serology.
- Routine standard haematological investigations.
- Stools.
- Urine.
- Others as required.

Chest X-ray and Mantoux test:

SEX/AGE DISTRIBUTION OF VIETANAMESE EXAMINED MAY-DEC 1977

Age	Sex		Total
	Male	Female	
0–5 years	24	26	50
6–15 years	43	31	74
16–59 years	183	88	271
60 plus years	1	4	5
Total	251	149	400

12.5%	pre-school children	68.0%	adults
18.5%	school aged	1.0%	pensionable age

18.2 Conditions Detected

18.2.1 *Intestinal Infestations:* T. trichiura, A. Duodenale and Salmonella accounted for approximately 50 per cent of all abnormalities.

18.2.2 *Dental Disease:* Approximately 30 per cent needing dental care for dental caries and abscesses.

18.2.3 *Skin Diseases:* Scabies and fungal infections.

18.2.4 *Pulmonary Tuberculosis:* Eleven cases.

18.2.5 *Sexually Transmitted Diseases:* Four cases.

18.2.6 *Pregnancy:* Six women.

18.2.7 *Cardiovascular:* Mitral stenosis and hypertension.

18.2.8 *Hemopoietic:* Iron deficiency anaemia Thalassemia.

19. MULTIPLE SCLEROSIS

Emphasis has been on public relations work to increase awareness not only between co-workers but the public also, of the particular medical, socio-economic and psychological needs of persons afflicted with this disease.

Talks, films and discussion groups were held in schools, at W.A.I.T., with Silver Chain Nurses, Community Health Nurses, Occupational Therapists at Royal Perth Hospital and several other hospitals.

A total of 583 home visits were made during the year by one field nurse. There were 61 new patients seen during the year and correspondence with seven other patients in the country areas. Counselling and liaison with other professional agencies and arrangements for medical aids were part of the resource facilities supplied.

20. COMMUNICATION AND ESCORT SISTERS

Based in Perth, this service makes regular visits to all major metropolitan hospitals to initiate or maintain contact with country clients of the Community Health Service. It aims to reduce cultural trauma to country clients especially tribal Aborigines from remote areas. It assists in providing medical information for proper client management and follow-up, as well as keeping families and the client informed of progress with interchange of messages by photographs, tapes and letters. It assists in locating interpreters and arranges return travel.

Nine hundred and sixteen patients discharged from hospitals were assisted in 1977:

Kimberley	207
Pilbara	192
Northern	185
South West	201
Goldfields	131

21. FLYING SISTERS

These nurses provide escort in conjunction with the Royal Flying Doctor Service, for patients evacuated to hospitals and for those entering hospital. They assist in remote clinic flights and in other community health aspects e.g. immunisations, contact tracing, etc. These nurses are located at Jandakot, Kalgoorlie, Geraldton, Carnarvon, Port Hedland, Derby and Wyndham.

The Geraldton base was opened in December 1977. Assistance was given in 2 854 Royal Flying Doctor Service flights throughout the State. Four thousand two hundred and ninety two patients were escorted to hospitals and 1 144 returned on flights from hospitals. (Details given in Tables 4–9).

TABLE 4

WESTERN AUSTRALIAN SECTION

ROYAL FLYING DOCTOR SERVICE YEARLY STATISTICS

JANDAKOT 1977

Month	Patients Carried		Mileage	No. of Flights
	To Hospital	From Hospital		
January	45	6	18 191	29
February	45	8	20 520	29
March	41	6	18 082	24
April	27	7	11 976	23
May	58	12	23 574	39
June	50	12	16 932	29
July	67	11	25 608	44
August	69	6	23 548	43
September	50	8	20 346	32
October	73	15	26 184	54
November	92	21	28 174	57
December	67	13	25 942	52
Total	684	125	259 077	455

TABLE 5

WESTERN AUSTRALIAN SECTION

ROYAL FLYING DOCTOR SERVICE YEARLY STATISTICS

CARNARVON 1977

Month	Patients Carried		Mileage	No. of Flights
	To Hospital	From Hospital		
January	52	7	21 940	34
February	42	10	16 447	28
March	42	11	24 545	31
April	59	5	22 477	37
May	32	22	20 989	39
June	51	12	22 770	38
July	43	9	17 350	33
August	47	13	23 134	35
September	31	1	17 029	26
October	40	7	15 032	24
November	48	14	22 622	30
December	30	18	16 427	26
Total	517	129	240 762	381

TABLE 6

WESTERN AUSTRALIAN SECTION

ROYAL FLYING DOCTOR SERVICE YEARLY STATISTICS

PORT HEDLAND 1977

Month	Patients Carried		Mileage	No. of Flights
	To Hospital	From Hospital		
January	83	19	52 885	65
February	92	36	40 392	68
March	87	33	39 778	71
April	62	39	33 283	59
May	88	34	45 980	71
June	89	25	42 554	61
July	98	32	49 352	76
August	95	31	43 835	71
September	88	31	45 863	74
October	80	27	42 586	62
November	97	24	47 572	62
December	60	15	39 503	51
Total	1 019	346	531 583	791

TABLE 7

EASTERN GOLDFIELDS SECTION

ROYAL FLYING DOCTOR SERVICE YEARLY STATISTICS

KALGOORLIE 1977

Month	Patients Carried		Mileage	No. of Flights
	To Hospital	From Hospital		
January	65	7	25 642	43
February	59	7	23 057	38
March	74	6	27 136	46
April	56	....	25 474	40
May	83	....	37 407	59
June	61	5	28 371	45
July	89	4	32 669	54
August	53	....	29 867	51
September	61	....	29 123	46
October	51	....	23 197	44
November	60	....	22 704	44
December	37	....	29 725	48
Total	749	29	334 372	558

TABLE 8

VICTORIAN SECTION

ROYAL FLYING DOCTOR SERVICE YEARLY STATISTICS

DERBY, 1977

Month	Total Miles Flown	No. Cases Seen		No. Cases to Hospital		No. Cases from Hospital		No. Flights
		White	Native	White	Native	White	Native	
January	10 034	15	149	2	53	....	12	27
February	9 575	15	227	5	41	....	31	26
March	12 775	19	204	9	52	2	29	34
April	12 804	37	230	3	56	1	6	33
May	13 908	39	190	14	65	1	10	30
June	14 653	22	198	15	65	2	32	40
July	10 992	30	260	9	81	1	32	28
August	13 370	20	212	8	50	2	40	31
September	12 622	24	190	7	68	....	15	29
October	15 524	18	147	13	66	....	21	35
November	14 328	22	233	7	58	4	34	37
December	13 424	22	232	1	69	5	25	34
Total	154 009	283	2 472	93	724	18	287	384

TABLE 9

VICTORIAN SECTION

ROYAL FLYING DOCTOR SERVICE YEARLY STATISTICS

WYNDHAM, 1977

Month	Total Miles Flown	No. Cases Seen		No. Cases to Hospital		No. Cases from Hospital		No. Flights
		White	Native	White	Native	White	Native	
January	8 748	42	192	17	23	9	10	20
February	11 162	57	180	9	30	5	16	21
March	8 572	68	201	13	33	1	16	20
April	15 073	45	190	9	36	5	10	29
May	9 578	53	219	11	39	3	15	24
June	14 643	49	230	11	41	6	15	27
July	15 090	51	202	15	45	6	19	32
August	8 957	68	179	11	26	4	23	23
September	12 290	46	201	23	18	15	14	24
October	12 030	60	200	24	23	7	13	24
November	13 367	47	200	4	29	....	10	24
December	7 751	45	90	16	3	11	6	17
Total	137 261	631	2 284	163	346	72	167	285

22. RECORDS

Implementation of Problem Orientated Health Records in the field were progressing well.

A pilot scheme for statistical data collection was tried in the latter half of the year and will be implemented in 1978.

23. LIAISON

Without the co-operation of the Public Health Department and Medical Services, Other Departments, non-governmental organisations and the clients we serve, the task would be immense. In an age of a multi-disciplinary approach to any problem good relationships are vital.

24. CONCLUSION

Field staff no matter now remote have contributed to the stabilising of the service. My gratitude goes out to each one.

CHILD HEALTH SECTION

The Child Health Section has shared in the increased advantage of the recent amalgamation of Community, Child and School Health Sections. This has been particularly so as far as field staff and their clients are concerned.

Financial restriction has meant a slowing down in the development of special programmes in the expectant mother and parenthood programmes, but in spite of this, there has been a rationalisation of activities in these areas.

The Regional Officers in the various Regions have been of considerable assistance relieving Field Nurses from their administration duties and allowing them to be more effective in their Child Health work.

VITAL STATISTICS

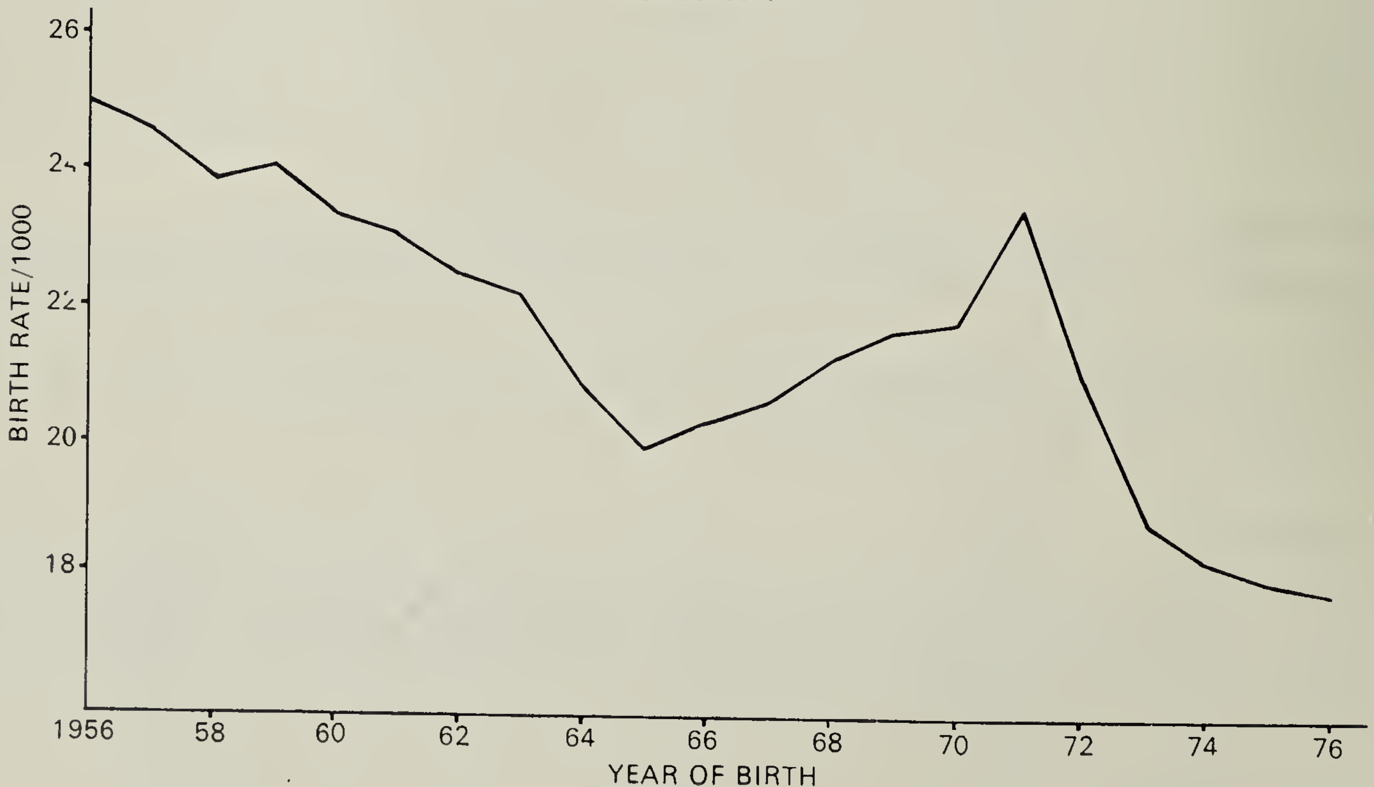
TABLE 1

WESTERN AUSTRALIAN STATISTICS 1977

Births	Perth Statistical Division	Rest of State	Whole State
LIVE BIRTHS—			
Number	13 571	7 080	20 651
Rate per 1 000 population	16·08	20·03	17·25
EX-NUPTIAL—			
Number	1 308	1 220	2 528
Percentages (of live births)	9·64	17·23	12·24

The birth rate in Western Australia is falling as shown in the graph below. This is in spite of an increase in the population in Western Australia which means that the actual number of births is not falling and the need for staff is maintained.

GRAPH 1



INFANT MORTALITY, NEO-NATAL DEATHS AND STILLBIRTHS

Below are tables and graphs demonstrating the figures and trends for 1977.

TABLE 2

WESTERN AUSTRALIAN STATISTICS (1977)

Deaths	Perth Statistical Division	Rest of State	Whole State
INFANT DEATHS (aged under 1 year)—			
Number	154	97	251
Rate per 1 000 live births	11·35	13·70	12·15
NEO-NATAL DEATHS (aged under 28 days)—			
Number	105	70	175
Rate per 1 000 live births	7·74	9·89	8·47

TABLE 3

INFANT MORTALITY IN WESTERN AUSTRALIA 1972-1977

Year	Perth			Rest of State			Whole State		
	Live Births	Infant Deaths		Live Births	Infant Deaths		Live Births	Infant Deaths	
		Number	Rate		Number	Rate		Number	Rate
1972	14 400	188	13·1	7 777	160	20·6	22 177	348	15·7
1973	13 307	213	16·01	7 203	181	25·13	20 510	394	19·21
1974	13 313	174	13·07	6 894	153	22·19	20 207	327	16·18
1975	13 406	150	11·19	6 932	121	17·46	20 338	271	13·32
1976	13 448	147	10·93	7 222	126	17·45	20 670	273	13·21
1977	13 571	154	11·35	7 080	97	13·70	20 651	251	12·15

The Infant Mortality rate shows a further decrease as compared with 1976. Indeed there has been a steady decline since the peak year of 1973. The whole State infant mortality figure is now 12·15 per 1 000 which is very satisfactory when compared with interstate and international standards, (see Table 3 and Graph 2).

GRAPH 2: W.A. INFANT DEATH RATE, 1966–1976

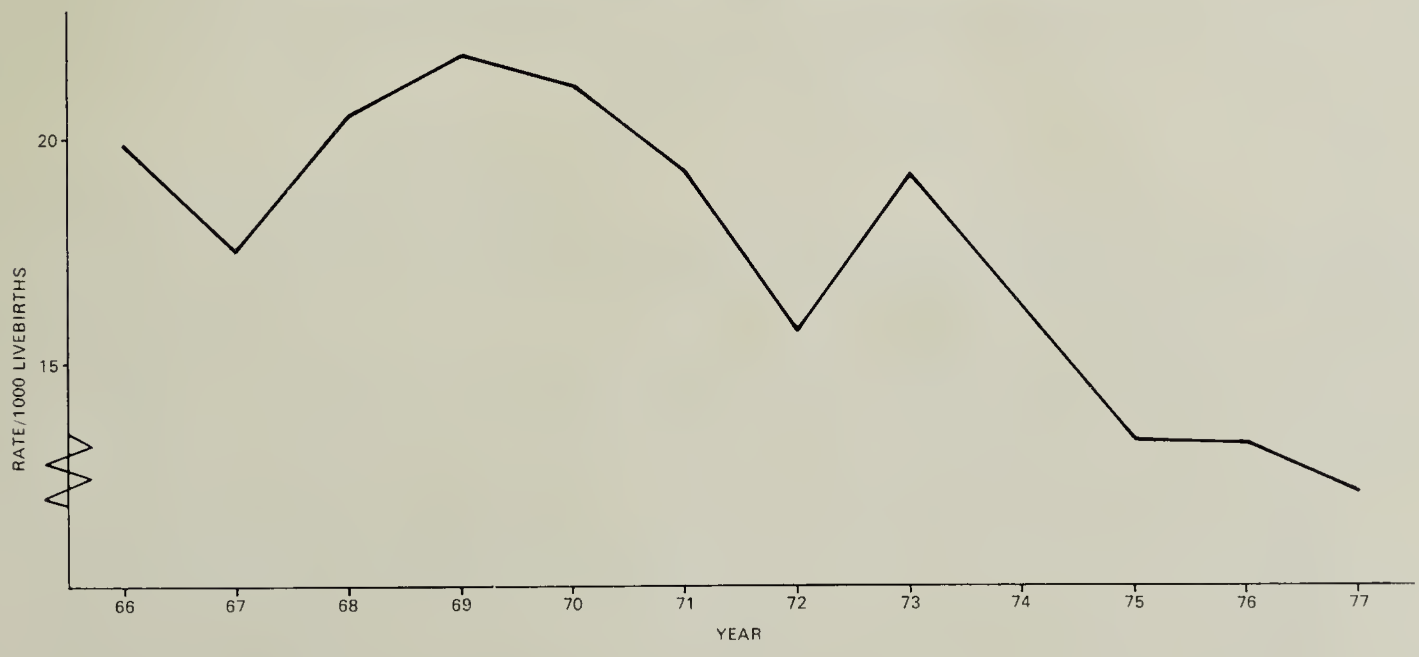


TABLE 4

NEO-NATAL DEATHS AS A PERCENTAGE OF TOTAL INFANT DEATHS 1972-1977

Year	Perth Statistical Division	Rest of State	Whole State
1972	72·3	59·4	66·4
1973	73·23	59·66	67·00
1974	77·01	54·90	66·67
1975	72·00	64·46	68·63
1976	66·67	61·90	64·47
1977	68·18	72·16	69·72

Neo-natal mortality again shows a steady fall over the past five years. The rate of 8·47 is again satisfactory and as a percentage of the total infant deaths, there is some improvement. Socio-economic and geographical factors prevent our rates going down to the level of the best in Europe e.g. Sweden.

The stillbirth rates for 1977 are unfortunately unavailable but over the past seven years there has been virtually no change in these figures. The main reason for this is the new definition of stillbirth, i.e. deaths from 20 weeks gestation rather than from 28 weeks are now included.

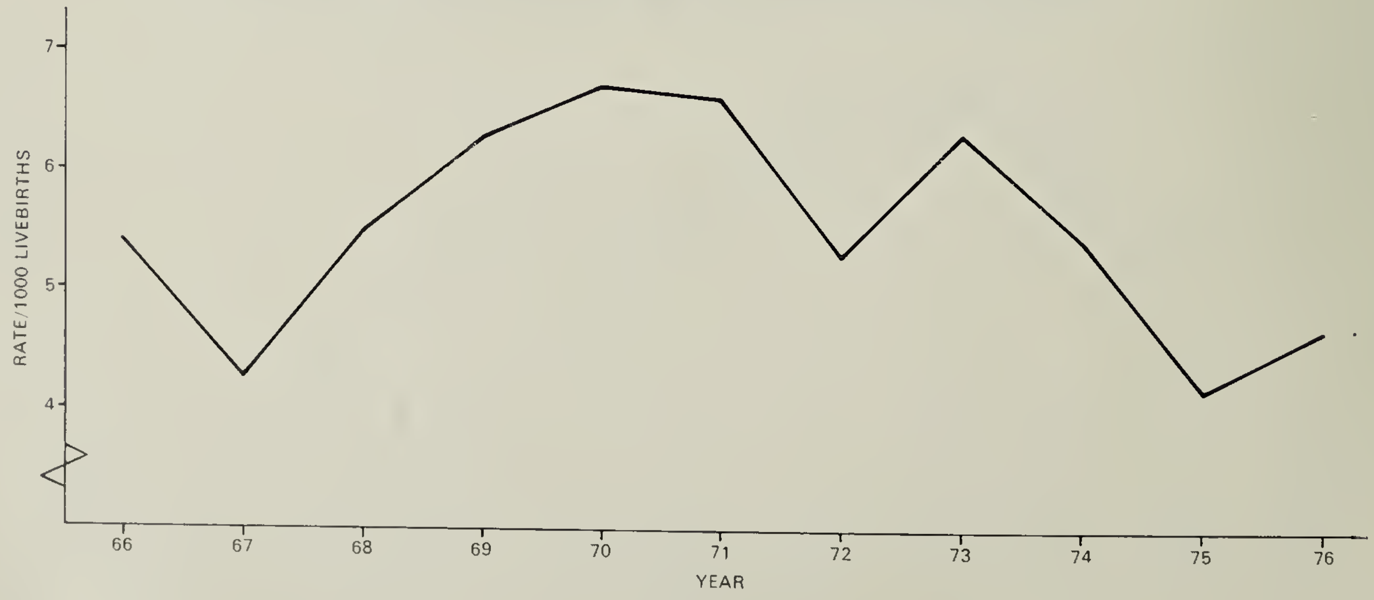
If we considered deaths under the old definition, there has been a steady improvement over the past seven years. Prematurity is still the large factor in stillbirths and neo-natal mortality, particularly in multiple births and with unmarried mothers. The rural unmarried mother is the one at particular risk as far as prematurity is concerned.

W.A. POST-NEO-NATAL DEATH RATE 1966–76

Internationally the post-neonatal death rate is regarded as an indicator of socio-economic conditions as they affect health. In the most developed countries less than 25 per cent of infant deaths should fall within this category. However, in the past 10 years, as shown by the figures in the previous section, the percentage has been consistently above 25 per cent and the variation has been slight.

Graph 3 hereunder shows that indeed the rate of deaths in the post-neo-natal period (i.e. 11 months to one year) has shown little variation. This could well indicate that little improvement in these figures can be expected until the environmental and social conditions of disadvantaged sectors in our population improves.

GRAPH 3: W.A. POST-NEONATAL DEATH RATE, 1966–1976



WORK DONE IN CHILD HEALTH CLINICS

Despite the levelling off in the numbers of births in W.A., the attendance figures have risen in 1977. This increase is due totally to increased attendance by children in the 1–5 year age group, particularly those over two years; this trend started in 1974 and has been evident since then.

Stycar Screening tests commenced in centres in 1972 and 93 288 tests (for developmental, hearing and visual delay) were performed in 1977. Seventy-two per cent of these were performed on children under the age of 12 months, 16 per cent on those aged 1–2 years and 12 per cent on those aged 2–5 years.

There has been a marked increase in the amount of advice given via the telephone and many parents obviously are finding this an increasingly convenient way of using their Child Health Service.

TABLE 5

WORK DONE IN CHILD HEALTH CLINICS 1973-1977

	1973	1974	1975	1976	1977
Birth Notifications Received	18 034	18 345	18 744	19 313	19 404
Births Registered	20 780	20 481	20 574	20 670	....
Gross Attendances	254 545	245 631	263 163	274 535	276 787
Individuals Attending—					
Under 1 year	24 746	23 529	24 526	24 581	23 762
1–2 years	11 512	10 964	11 898	11 550	12 736
Over 2 years	7 537	8 636	9 935	10 109	11 254
Total	43 795	43 129	46 359	46 240	47 752
Home Visits	32 598	34 386	37 641	40 100	40 636
Telephone Consultations	29 444	32 463	36 910	41 463	49 514
Hospital Visits	18 013	16 651	19 190	19 203	....
Urine Tests	16 830	16 561	22 036	17 119	17 051
Number of Expectant Parent Classes	710	636	358	682	909
Gross attendance at Expectant Parenthood Classes	....	....	....	....	19 876

The rise in the number of Expectant Parenthood classes and their ever enlarging attendances demonstrate the increasing demand by future parents for knowledge in the birth and parenting area. We feel that this is an important part of our work, but we are concerned to reach those parents most in need of education and advice. These programmes are to be continued and expanded in 1978.

STAFF

Dr. Fiona Stanley was appointed as Senior Medical Officer in the Child Health Section and started work in November.

Twenty-seven new appointments were made in the nursing staff in 1977. Difficulties have continued to be encountered in the staffing of the more isolated country areas.

CORRESPONDENCE SECTION

This Section continues to support and provide Child Health cover to those isolated individuals and groups in need of it. Tea and Sugar Train Services continued monthly and were well received.

A schedule of country trips was carried out which particularly covered areas without a Child or Community Health Nurse. The Family Living Course to remote school children continues.

Birth Notifications Received	690
First contacts (includes referrals)	937
Second contacts....	2 919
Individual letters received from parents	1 199
Telephone advice to parents	4 565

SCHOOL RESOURCES SECTION

Further development of the work of this Section has taken place in 1977. This includes the introduction of a Pre-parent education course for older high school students, and the expansion of the parenthood course into country areas.

City	5 527
Country	1 000
Total number of students	6 527

SCHOOL HEALTH SECTION

1977 was a year for consolidation of the development and expansion that had taken place in previous years.

Considerable progress was made as well in the co-ordination of the Child, Community and School Health Sections of the Community and Child Health Services Branch.

STAFF

Medical Officers—

Vacancy	1
Replacement	1
Total Establishment (10 full time, 3 part time)	13

Social Workers—

Total Establishment	1

Speech Pathologists—

Vacancies	2
Total Establishment	4

Nursing Staff—

Resignations	17
New Staff	19
Part time Staff	2
Replacements	17
Total Establishment to 31/12/77	112
Total Staff Establishment at 31/12/77	130

Table 1 shows the total number of Institutions in the State to be covered by the School Health Section.

TABLE 1

NUMBER OF INSTITUTIONS 1977

	Metropolitan	Country	Total
Child Care	62 day care 3 occasional care 149 family care 14 Govt. day care 5 Govt. Occ. care	5 day care 2 occasional care 17 family care 4 Govt. day care 2 Govt. Occ. care	67 day care 5 occasional care 166 family care 18 Govt. day care 7 Govt. Occ. care
Kindergartens	161	126	287
Government School (Primary and Pre-Primary)	242	254	496
Government Schools (Secondary)	47	25	72
Government Schools (District High)	....	52	52
Government Special Schools	17	10	27
Catholic Education Commission Schools (Primary)	62	37	99
Catholic Education Commission Schools (Secondary)	20	8	28
Catholic Education Commission Schools (Primary and Secondary)	12	7	19
Independent Schools—			
Primary	9	5	14
Secondary	8	....	8
Primary and Secondary	17	3	20

The total number of enrolments in 1977 is shown in Table 2 below.

TABLE 2

ENROLMENTS FOR 1977

	Metropolitan	Country	Whole State
Child Care Centres—			
Family Care	1 028	70	1 098
Government Day and Occasional Care	787	187	974
Private Day and Occasional Care	1 596	195	1 791
Kindergartens	3 434	3 446	6 880
Government Primary	90 893	48 246	139 139
Government Secondary	45 959	19 449	65 408
Non-Government Primary	....	....	24 851
Non-Government Secondary	....	....	19 406
Total	....	....	259 547

In the total number of pre-school and school children examined by School Health Staff during 1977, as shown in Tables 3 and 4, the Year one school entry population was covered very well as 30 085 children had a full health appraisal (an increase of 7 542 over 1976) in addition to 17 384 pre-school children having a full health appraisal (an increase of 3 261 over 1976). Ten thousand eight hundred and three more children had a full health appraisal in 1977 than in 1976.

TABLE 3

NUMBER OF PRE-SCHOOL CHILDREN EXAMINED BY SCHOOL HEALTH STAFF IN 1977

	Metropolitan	Country	Whole State
Full Health Appraisals (Including screening tests and physical examination)	13 865	3 519	17 384
Vision Tests	15 108	4 160	19 268
Hearing Tests	15 103	4 066	19 169

TABLE 4

NUMBER OF SCHOOL CHILDREN EXAMINED BY SCHOOL HEALTH STAFF IN 1977

	Metropolitan	Country	Whole State
Full Health Appraisals (Including screening tests and physical examination)	19 861	10 224	30 085
Vision Tests	84 070	30 191	114 261
Hearing Tests	56 604	23 677	80 281

DISTRICT HEALTH TEAMS

Southwell Child Health Services Centre

Southwell Child Health Services Centre expanded its activities during 1977 and a total of 222 new referrals were made. All in all, there were 665 attendances at the Centre. The main category of referrals was in the speech pathology areas—(130), and most referrals came from the School Health Section (73) and child Health Centres (33). Four children were referred by private General Practitioners.

Queens Park Child Health Services Centre

A total number of 253 new cases were referred to the Centre and there were 682 attendances. One hundred and twelve were referred from the School Health Section, 88 from Child Health Section, and two from private Medical Practitioner. Again, speech problems were the largest single category (131). Mrs Cameron (Guidance Officer) and Mrs. Frost (Social Worker) have commenced group discussions with parents where referral of a child has indicated that this type of programme could be of benefit. In all, 62 parents have attended these sessions.

Koondoola Child Health Services Centre

A total number of 250 new cases were referred to the Centre in 1977 and there were 632 attendances. Sixty-two children were referred from the School Health Section and 39 by Child Health. There were 62 speech problems (an unrealistic figure as since October all new referrals for speech are having to be sent to Princess Margaret Hospital). An enuresis clinic was set up in March 1977 to give assistance to parents of enuretic children. Ninety-one children have attended the Centre, the majority being referred directly by parents. An enuresis machine was supplied and has proved to be effective, particularly in boys in the age range 10–14 years in whom no other therapy has proved successful. In 1978 a programme with mothers of pre-school children will be arranged in kindergartens and pre-primary schools entitled: "Normal Behaviour in the Pre-School Child".

COUNTRY PROGRAMMES

School Health Nurses are now based in:—

Albany
Bunbury
Busselton
Dalwallinu
Esperance
Geraldton
Gnowangerup
Harvey/Donnybrook
Kalgoorlie/Boulder
Katanning/Kojonup
Kondinin
Koorda
Mandurah
Manjimup
Merredin
Moora
Narrogin/Pingelly
Northam
Rockingham
Wagin

All the South West Region was fully covered in 1977 which is very gratifying. Medical Officers still visit each country base twice a term in order to arrange necessary referrals and consultations.

SCHOOL-BASED NURSES (Secondary School Programme)

The attachment of nurses to the staff of secondary schools and their contributory Primary schools expanded considerably in 1977. During 1977 nurses were attached to the staff of the following senior high schools—

Albany
Balga
Balcatta
Belmont
Bentley
Bunbury
Carine
Churchlands
Collie
Derby District High
Eastern Goldfields
Geraldton
Girrawheen
Governor Stirling
Hampton
Hollywood
John Curtin
John Forrest
Kalamunda
Karratha
Katanning
Kelmscott
Kewdale
Kwinana
Lockridge
Melville
Morley
Mt. Lawley
Newman
Northam
North Lake
Perth Modern
Rockingham
Rossmoyne
Scarborough
Tuart Hill

ACTIVITIES OF NURSES IN SECONDARY SCHOOLS, 1977
STUDENT CONTACTS (COUNSELLING, FIRST AID, ETC.)

—	Boys	Girls	Total
Metropolitan High Schools	29 253	44 305	73 558
Country High Schools	5 927	11 836	17 763

Nurses are based in Disadvantaged Schools as follows:

Balga Senior High School	1/5 time
Hamilton Hill Senior High School	2
Highgate Primary School	
Hilton Park Primary School	
Midvale Primary School	
Roebourne Primary School	
South Fremantle Senior High School	2

ACTIVITIES OF NURSES IN DISADVANTAGED SCHOOLS, 1977

STUDENT CONTACTS (COUNSELLING, FIRST AID, ETC.)

	Boys	Girls	Total
Disadvantaged High Schools	2 154	2 495	4 649
Disadvantaged Primary Schools, including Roebourne	1 385	1 550	2 935

PRE-SCHOOL HEALTH TEAM

The overall aims of the Pre-School Health Team remain the same as previously, namely health surveillance in its widest sense for all children in day care in the metropolitan area.

TABLE 1

NUMBER OF CHILD CARE CENTRES, NOVEMBER 1977

Day Care	81
Occasional Care	12 (7 involved with Team)
Family Care	+143

TABLE 2

POTENTIAL ENROLMENTS 1977

Day Care	2 483 (Actual 2 726)
Occasional Care	380 (197 involved with Team)
Family Care	+605

The total number of children examined by the Pre-School Nurses is shown in Table 3.

TABLE 3

	Boys	Girls	Total
Total Number Full Appraisals	864	696	1 560
Total number vision tests	986	810	1 796
Total number hearing tests	985	806	1 791
Number referred to Team	210	134	344
Number referred to General Practitioner	....	....	44
Number referred to speech	....	....	9
Number Dental Attention	....	....	10
Number Home Attention	....	....	2

Further details are available in Appendix 10, which shows that the ratio of children referred by the nurse was 1:4·5. This indicates that between 20 per cent and 25 per cent of all children in Day Care Centres need some sort of evaluation by a multi-disciplinary health team.

This year there has been good co-operation with the Child Health Nurses in visiting Family Care and Day Care Centres which enrol children under 12 months of age in their areas.

The liaison with Early Childhood Section of the Department of Community Welfare has been strengthened during the year and both teams have enjoyed the educational content of the meetings.

It is hoped that a fourth nurse will be joining the team in 1978 and this should increase the overall efficiency and quality of service offered to children in a Day Care situation.

TABLE 4

TOTAL NUMBER OF HEALTH APPRAISALS, NURSES

Total Number of Full Health Appraisals by Nurses	47 469
Total Number of Vision Tests	133 529
Total Number of Hearing Tests	99 450
Referred for Full Assessment of Visual Handicap to Family Doctor	2 535
Referred for Assessment by Medical Officer (School Health)	25 186
Referred for Home Attention by Parents (Hygiene, Nutrition, Infestations)	5 504
Referred for Dental Attention	4 027
Referred for Vision Colour Defect	862

TABLE 5

ASSESSMENTS AND REFERRALS BY MEDICAL OFFICERS

Number Referred to—	
Family Doctor (including Vision)	3 233
Child Development Centre	62
Guidance Branch	362
Irrabeena	22
Speech Therapy Services	643
Princess Margaret Hospital	294
Fremantle Hospital	38
Other Hospitals	100
Private Specialists	290
National Acoustic Laboratory	88
Community Health Section	302
Mental Health Services	7

TABLE 6

CLASSIFICATION OF CONFIRMED DISABILITIES AND HANDICAPS UNDER SYSTEMS, 1977

VISUAL HANDICAP (TOTAL)	2 146
Refractive Errors	1 008
Strabismus	224
Spectacles Prescribed	760
Surgery	19
HEARING HANDICAP (TOTAL)	1 434
Sensorineural Deafness	179
Secretory Otitis Media	184
Chronic Suppurative Otitis Media	187
Perforations (Chronic)	157
Hearing Aids Supplied	5
Surgery	90
CARDIOVASCULAR SYSTEM (TOTAL)	27
Congenital Heart Disease	20
Atrial Septal Defect	6
Ventricular Septal Defect	4
Aortic Stenosis	1
Pulmonary Stenosis	4
Patent Ductus Arteriosus	4
Coarctation of the Aorta	1
Rheumatic Heart Disease	7
MUSCULOSKELETAL SYSTEM (TOTAL)	205
Scoliosis	126
DISORDERS OF GROWTH AND NUTRITION	155
Obesity	103
GENITO-URINARY SYSTEM	226
Undescended Testes	107
CENTRAL NERVOUS SYSTEM....	65
PSYCHOSOCIAL AND DEVELOPMENTAL DISORDERS	1 041
Speech Disorders (requiring therapy)	578
Total Number of Disabilities and Handicaps taken from Appendices IV, V, VI, VII, VIII and IX	5 299

CHIDLEY EDUCATIONAL CENTRE, 1977

During the year, 72 children were given full medical assessments by a team of three doctors. Two medical officers visited on a weekly basis, the third giving cover when the others were not available. Of the 72 children seen, 55 were boys and 17 were girls. Their ages ranged from six years four months, to 13 years eight months, with an average age of 11 years five months. All the children had been referred to Chidley Point because of their poor progress at school.

DISABILITIES IDENTIFIED :

Refractive Errors	5
Sensorineural Hearing Loss	2
Secretory Otitis Media	1
Speech problems (requiring therapy)	6
Cerebral Palsy	2
Diabetes Mellitus	1
Epilepsy and Cerebral Palsy	1
Enuresis	8
Hyperkinesis	3
Emotional and Social problems	13

This indicates that children referred to Chidley Centre have a high index of physical, intellectual and emotional disorders; as they all come from country and isolated areas it reflects that probably these problems have not been previously fully assessed. It is very important that a close association between health and educational services is maintained if these children are to be adequately managed.

SCOLIOSIS SCREENING

Screening of Year 8 (12–13 year olds) students for idiopathic adolescent scoliosis commenced in 1977. All Medical Officers (Child Health) attended a seminar conducted by Dr. G. Bedbrook, Mr. B. Slinger and Mr. A. Dwyer at the Royal Perth Rehabilitation Hospital, Shenton Park. Following this, medical officers and nurses commenced scoliosis screening and results to date are as follows:—

Screened	5 388
Referred	344
Normal	35
Limb Length Inequality	34
Scoliosis	96
Epiphyseal Dysplasia	1
Results Pending....	190

This shows that out of 5 388 children screened, there was a referral rate of six per cent of whom 96 had a structural scoliosis requiring further observation. Only two of these children had a severe scoliosis requiring surgery. These results indicate that this programme is a valuable and worthwhile one and should be continued. In 1978 the nurses will undergo training so as to be able to carry out preliminary screening before the medical officers are involved.

During 1977 the work of the School Health Section was expanded and strengthened in existing areas of responsibility. The commencement of the School-Based Nurse Programme in areas north of the State (Derby, Newman and Karratha) has shown great promise.

CHILD DEVELOPMENT CENTRE

The expansion in this section has continued throughout the year in a number of areas—

(1) The new building was occupied in September 1977, and is already adding to the effectiveness and efficiency of the team and the programmes offered.

(2) Staffing—Full-time staff comprise a Paediatrician, Social Work Supervisor, Social Worker, Senior Speech Pathologist, Nurse Co-ordinator, Secretary, two Typists and a Clerk. There are three part-time Psychologists, a part-time Developmental Psychologist. Physiotherapist, Psychiatrist, Social Worker, two Paediatricians and a Medical Officer, also assist part-time.

The Work Pattern

The staff function on an inter-disciplinary basis, viewing requests for referrals at an Intake Meeting once a week, and discussing patient management at a full team meeting once a week.

There were 260 new patient referrals to the Centre during the year, with a total patient attendance of 1 811. The bulk of referrals tend to be in the pre-school group, and to be concerned with problems of overall development, behaviour disturbance and parent/child management. Forty-five per cent of the referrals are from the staff of the Community and Child Health Services, with twenty-two per cent coming from the family general practitioners, fifteen per cent from the educational professionals, and eighteen per cent from other health professionals.

Beyond the assessment procedure, management programmes are offered, some children attending regular physiotherapy, many being entered for treatment of language disorder; group experience programmes for parents have commenced.

Social Work

The two Social Workers and the Acting Social Work Supervisor are based in the Child Development Centre, but each is also attached to one of the Regional Centres at Koondoola, Queen's Park and Southwell. Strenuous attempts are being made to make the Social Workers' service more effective, by trying various approaches—the use of groups, family therapy, the use of films and tapes, and working through Child Health and Community Health Sisters. It is envisaged that in the future the scope for working from Regional Centres will be increased in addition to the work of the Child Development Centre.

Speech Pathology

One full-time and three part-time (total of eight sessions) clinicians work in the Child Development Complex. Their role is to participate as team members or act as consultants to the Team involved in the assessment of children requiring full multidisciplinary evaluation. In addition, there are a number of families where the speech Pathologist is the primary therapist.

The senior supervising clinician has a wider role as adviser to other clinicians in the Department and as consultant to the wider Community and Child Health Section, and is involved in departmental education programmes.

There is a heavy student teaching commitment providing clinical experience and teaching for second and fourth year students from the Speech and Hearing Science Course at W.A.I.T. Block placements are offered over the summer and during semester time a total of seven sessions are spent in student supervision.

Currently there are 175 families on active files.

Post-graduate Education

A four-week Course in Developmental Paediatrics was held from 3rd October to 28th October, 1977. This was attended by seven medical officers of the Community and Child Health Services, one from South Australia, and another from Canberra. An optional additional week of training was offered in the use of the Griffiths Developmental Scales for children. This was attended by four medical officers. Both courses will be offered in 1978.

CONCLUSION

As can be seen from the above report, there has been considerable development of services in this Branch in 1977 in spite of restrictions on expansion. Appreciation again must be expressed to the efforts of staff in this achievement.

APPENDIX I

NUMBER OF SCHOOL CHILDREN EXAMINED BY SCHOOL HEALTH SECTION 1977

	Metropolitan			Country			Total
	Male	Female	Total	Male	Female	Total	Whole State
Full Health Appraisals	9 848	10 013	19 861	5 193	5 031	10 224	30 085
Part Examinations	35 179	35 377	70 556	10 677	10 648	21 325	91 881
Vision Tests	42 146	41 924	84 070	15 580	14 611	30 191	114 261
Hearing Tests	29 119	27 485	56 604	12 336	11 341	23 677	80 281
Nurses' Referrals for Vision	744	886	1 630	283	357	640	2 270
Nurses' Referrals to Medical Officers—							
Speech Problems	474	232	706	325	132	457	1 163
Cardiovascular System	722	669	1 391	628	546	1 174	2 565
Undescended Testes	390	....	390	331	....	331	721
Herniae	42	14	56	42	15	57	113
Orthopaedic Problems	556	570	1 126	124	94	218	1 344
Strabismus	309	349	658	299	244	543	1 201
E.N.T. Problems	315	249	564	275	270	545	1 109
Hearing Impairment	416	292	708	271	267	538	1 246
Growth and Development	282	170	452	120	67	187	639
Other	112	90	202	75	73	148	350
Home Attention	1 756	1 817	3 573	702	562	1 264	4 837
Dental Attention	952	822	1 774	1 043	870	1 913	3 687
Colour Blindness	639	....	639	193	3	196	835

APPENDIX II

NUMBER OF PRE-SCHOOL CHILDREN EXAMINED BY SCHOOL HEALTH SECTION 1977

	Metropolitan			Country			Total
	Male	Female	Total	Male	Female	Total	Whole State
Full Health Appraisals	7 192	6 673	13 865	1 817	1 702	3 519	17 384
Part Examinations	666	557	1 223	499	461	960	2 183
Vision Tests	7 838	7 270	15 108	2 113	2 047	4 160	19 268
Hearing Tests	7 838	7 265	15 103	2 025	2 041	4 066	19 169
Nurses' Referrals for Vision	118	111	229	21	15	36	265
Nurses' Referrals to Medical Officers—							
Speech Problems	298	142	440	93	60	153	593
Cardiovascular System	485	451	936	176	172	348	1 284
Undescended Testes	373	....	373	117	....	117	490
Herniae	44	10	54	10	7	17	71
Orthopaedic Problems	98	96	194	21	22	43	237
Strabismus	273	232	505	193	102	298	803
E.N.T. Problems	196	146	342	75	58	133	475
Hearing Impairment	91	98	189	34	23	57	246
Growth and Development	183	92	275	44	21	65	340
Other	65	29	94	6	3	9	103
Home Attention	121	52	173	46	48	94	267
Dental Attention	18	25	43	134	163	297	340
Colour Blindness	27	....	27	....	....	....	27

APPENDIX III

MEDICAL OFFICERS' ASSESSMENTS AND REFERRALS 1977

	School Children		Pre-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
Number Referred to—					
Family Doctor (including Vision)	1 747	968	370	148	3 233
Child Development Centre	17	15	6	24	62
Guidance Branch	147	125	59	31	362
Irrabeena	9	8	5	....	22
Speech Therapy Services	291	165	131	56	643
Princess Margaret Hospital	174	78	30	12	294
Fremantle Hospital	36	....	1	1	38
Other Hospitals	57	12	27	4	100
Private Specialists	58	185	21	26	290
National Acoustic Laboratory	54	18	15	1	88
Community Health Section	27	244	6	25	302
Mental Health Services	2	....	5	....	7

APPENDIX IV
CAUSES AND MANAGEMENT OF VISUAL HANDICAPS

	School Children		Per-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
Total Number of Children Referred after Screening	1 630	640	229	36	2 535
Refractive Errors	646	228	115	19	1 008
Infections	31	18	18	5	72
Trachoma	....	11	....	3	14
Strabismus	89	86	44	5	224
Foreign Bodies	2	3	2	....	7
Congenital Nystagmus	4	9	....	....	13
Retinal Scarring	2	4	....	....	6
Vitamin A Deficiency	....	....	....	....	....
Congenital Ptosis	8	....	3	....	11
Post Meningitis Impairment	1	1	....	....	2
Amblyopia	60	43	5	....	108
Results Pending	303	215	49	11	578
Normal Vision	68	45	15	7	135
Management—					
Spectacles Prescribed	468	221	63	8	760
Surgery	4	8	2	5	19

APPENDIX V
CAUSES AND MANAGEMENT OF HEARING HANDICAP

	School Children		Pre-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
Sensorineural Deafness	73	97	8	1	179
Secretory Otitis Media	98	58	24	4	184
Chronic Suppurative Otitis Media	55	105	6	21	187
Perforations (Chronic)	27	117	4	9	157
Foreign Bodies	19	31	9	2	61
Otitis Externa	13	23	4	8	48
Transient Hearing Loss	37	157	11	14	219
Wax (Cerumen)	40	49	11	9	109
Acute Otitis Media	17	35	10	4	66
Normal Hearing	31	62	8	....	101
Results Pending	65	91	22	6	184
Management—					
Hearing Aids Supplied	....	4	....	1	5
Surgery	36	43	11	....	90

APPENDIX VI
CAUSES OF DISABILITIES FOUND ON SCREENING

	School Children		Pre-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
CARDIOVASCULAR SYSTEM—					
Congenital Heart Disease—					
Atrial Septal Defect	2	3	....	1	6
Ventricular Septal	3	1	....	....	4
Aortic Stenosis	1	....	....	....	1
Pulmonary Stenosis	3	1	....	....	4
Patent Ductus Arteriosus	1	....	3	....	4
Coarctation of the Aorta	....	....	1	....	1
Total	....	....	....	....	20
Rheumatic Heart Disease	5	2	....	....	7

APPENDIX VII
CAUSES OF DISABILITIES FOUND ON SCREENING

	School Children		Pre-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
Musculoskeletal System—					
Muscular Dystrophies	....	....	1	....	1
Scoliosis	99	21	5	1	126
Feet (Pes Planus, etc.)	14	5	1	3	23
Perthes Disease	2	1	1	....	4
Genu Valgum	10	2	1	....	13
Fractures and Trauma	16	4	1	....	21
Other....	9	2	5	1	17
Disorders of Growth and Nutrition—					
Under Nutrition	9	13	1	2	25
Obesity	37	57	3	6	103
Growth Retardation	8	6	....	....	14
Dwarfism (Achondroplasia)	1	....	....	1	2
Malabsorption	1	....	....	....	1
Nutritional Anaemia	....	6	....	2	8
Thyrotoxicosis	....	....	....	....	....
Hypothyroidism	....	1	1	....	2

APPENDIX VIII
CAUSES OF DISABILITIES FOUND ON SCREENING 1977

	School Children		Pre-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
Genito-Urinary System—					
Bilateral Undescended Testes	6	18	4	2	30
Unilateral Undescended Testes	22	33	11	11	77
Hydrocoele	17	11	8	5	41
Inguinal Hernia	7	5	8	1	21
Enuresis	22	21	6	8	57
Central Nervous System—					
Cerebral Palsy	4	1	....	....	5
Congenital Tremor	1	2	....	....	3
"Clumsy Child" Syndrome	14	8	....	2	24
Epilepsy	8	4	....	....	12
Migraine and Recurrent Headaches	....	13	....	2	15
Cerebral Neoplasm	1	....	....	....	1
Congenital Hypotonia	2	....	....	....	2
Craniostenosis	3	....	....	....	3

APPENDIX IX
CAUSES OF DISABILITIES FOUND ON SCREENING, 1977

	School Children		Pre-School Children		Total
	Metropolitan	Country	Metropolitan	Country	Whole State
Psychosocial and Developmental Disorders—					
Speech Disorders (requiring speech therapy)	223	183	99	73	578
Developmental Delay	22	23	21	19	85
Behaviour Problem (referral other agencies)	63	20	29	12	124
Behaviour Problems (managed within the service)	19	10	7	5	41
Learning Difficulties	59	114	....	4	177
Mental Retardation	1	2	1	1	5
Encopresis	10	19	2	....	31

APPENDIX X
PRE-SCHOOL HEALTH TEAM
TOTAL NUMBER OF PRE-SCHOOL CHILDREN REFERRED BY NURSES, 1977

	Boys	Girls	Total
Reasons for Referral—			
Social/Behavioural	29	12	41
Speech....	46	22	68
Development	34	12	46
Hearing	20	19	39
E.N.T.....	3	5	8
Heart	24	20	44
Vision	9	19	28
Squint	11	10	21
Growth	4	4	8
Co-Ordination	3	1	4
Testes	16	....	16
Orthopaedic	6	8	14
Other Physical	4	2	6
Bed Wetting	1	....	1
Total Number Referred	....	....	344

APPENDIX XI
PRE-SCHOOL HEALTH TEAM
OUTCOME OF PRE-SCHOOL CHILDREN REFERRED BY MEDICAL OFFICERS

Speech	3 receiving treatment 2 on review
Hearing	8 had surgery and gromets inserted 2 normal hearing 2 results pending 4 on review
Heart	1 confirmed V.S.D. 1 confirmed Aortic Stenosis
Testes	2 results pending
Development	6 have some degree mental retardation 4 on-going assessment
Vision	1 confirmed hypermetropic, astigmatism 1 result pending
Growth Retardation	Awaiting result
Orthopaedic	1 on review 1 no action 3 awaiting results
Social/Behaviour	4 cases closed 6 on-going cases

Appendix VI

Community Health Programme

Lawson J. Holman,
J.P., M.B.B.S., F.R.C.S.E., D.P.H., F.A.C.M.A.
Director General of Public Health

In 1976 the 1 169 800 people in Western Australia utilised 2 041 337 bed days in hospitals in this State. In 1977 the population rose to 1 197 100. At the same rate as in 1976 it could be expected that 2 088 976 bed days would be utilised. However, the actual bed days taken in 1977 was 2 019 525, a saving, actual over expected, of 69 451 bed days. The average cost of each unit in 1977 was $98 so a saving of $6 806 198 occurred.

Although analysis of the particulate factors involved in this saving has not been carried out because of the extensive time and cost such a procedure would involve, it is reasonable to claim because the Community Health Programme seeks to provide an alternative to expensive hospital care, that the Programme is in fact achieving one of its stated aims.

During 1977, the Community Health Programme experienced two distinct phases of activity. These were dictated by the level of Commonwealth funding made available in the financial year ending 30th June, 1977, and in the first six months of the following financial year.

PERIOD 1st JANUARY—30th JUNE, 1977

During this first half of the year it was necessary to exercise great restraint because of the severe restriction in funding. Although 31 submissions for the new Community Health Programme projects were developed and submitted to the Commonwealth for the 1976/77 financial year, new projects were prohibited by the Commonwealth authorities. Staff complements were retained at existing levels and with a small number of minor exceptions, no growth in service was allowed.

PERIOD 1st JULY—31st DECEMBER, 1977

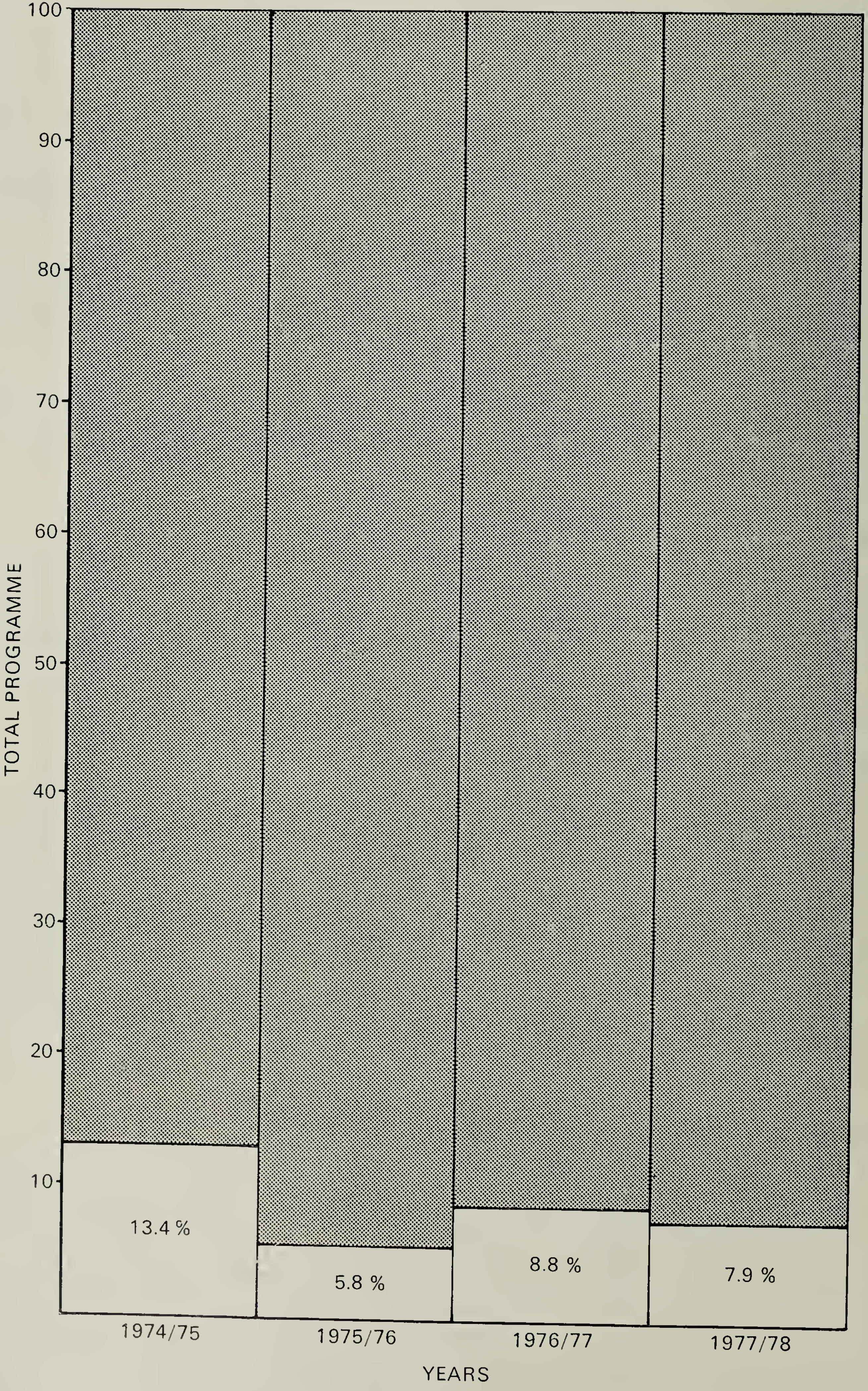
The Commonwealth Government provided a Block Grant of $6 353 000 for the 1977/78 financial year. The State Government matched the Commonwealth Block Grant on a revised cost sharing basis. For the 1977/78 financial year, the Commonwealth contribution towards operating costs was reduced to 75 per cent (previously 90 per cent and the contribution for capital costs was reduced to 50 per cent (previously) 75 per cent). The effect of the increase in the size of the Commonwealth Block Grant from the previous year, together with the substantial increase in the State share required by the change in cost sharing, resulted in a significant increase in the total funds provided for the Community Health Programme. The period from 1st July, 1977 to 31st December, 1977 is the most notable period of activity that has taken place in the short history of the Community Health Programme in this State.

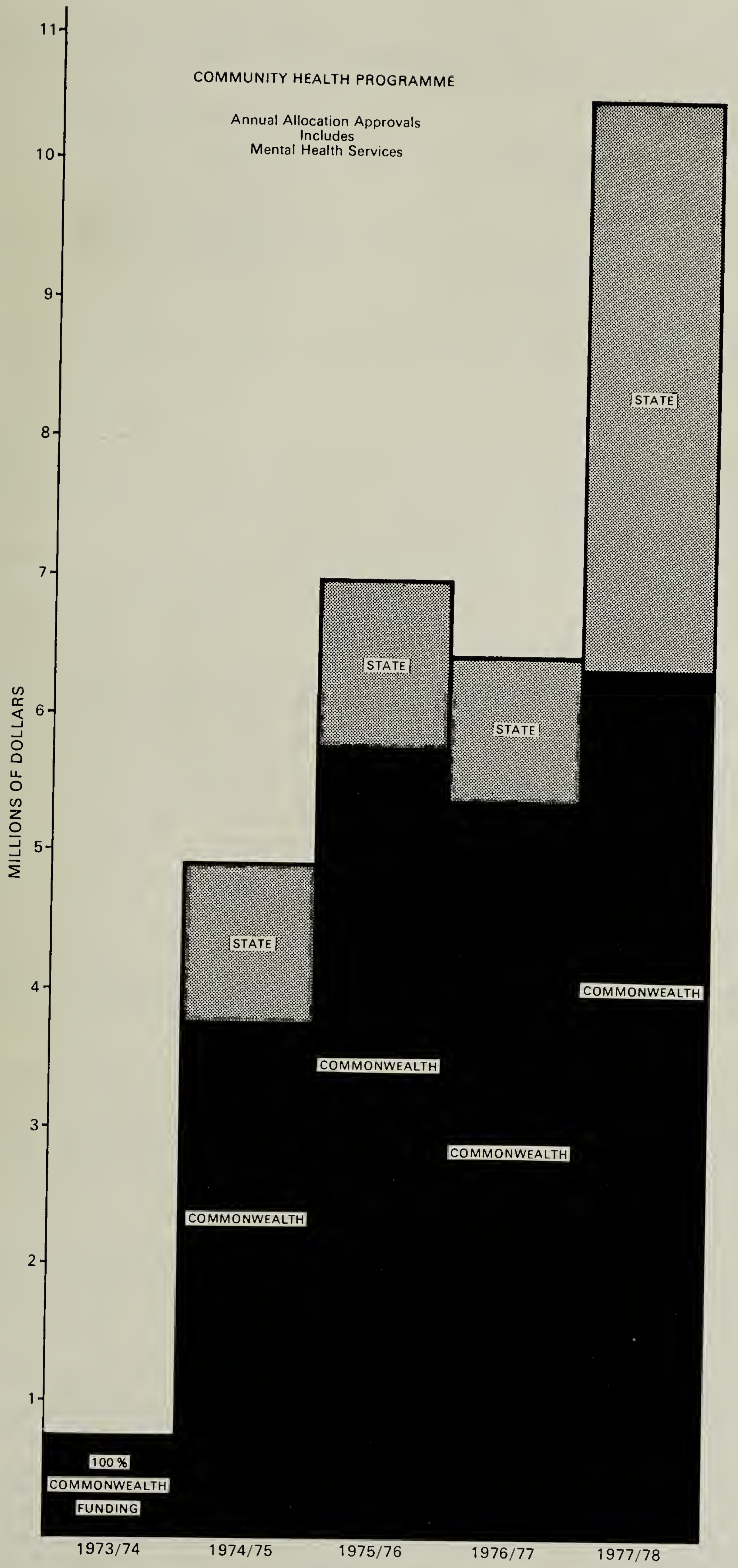
COMMONWEALTH/STATE STANDING COMMITTEE

The erratic nature of the activity within the Community Health Programme as determined by the variations in Commonwealth funding from year to year, was pointed out to Commonwealth officers at the meeting of the Commonwealth/State Standing Committee (Community Health Programme) held on 21st November, 1977. It was proposed that a more orderly approach would be obtained by the development of a three-year rolling programme. The problems of recruiting administrative and professional staff at short notice, and obtaining the services of Public Works Department officers and others, was discussed. Commonwealth officers indicated that the Commonwealth Government is actively considering legislation to ensure continuity for the Community Health Programme, but was opposed in principle to three-year programmes.

COMMUNITY HEALTH PROGRAMME

The Community Health Programme's share of the total actual expenditure expressed in Commonwealth terms. Includes Public Health and Mental Health sectors.





COMMUNITY HEALTH PROGRAMME
Annual Allocation Approvals
Includes
Mental Health Services
MILLIONS OF DOLLARS
11
10
9
8
7
6
5
4
3
2
1
STATE
STATE
STATE
STATE
COMMONWEALTH
COMMONWEALTH
COMMONWEALTH
COMMONWEALTH
100 %
COMMONWEALTH
FUNDING
1973/74
1974/75
1975/76
1976/77
1977/78

EXPANSION—STAFF

Funds were provided and Public Service Board approval was obtained for the creation of 91 new staff positions. These comprised:—

(72) *Professional Staff*	
2	Paediatric Registrars
1	Scientific Officer
2	Radiographers
1	Audiologist
1	Speech Therapist
4	Occupational Therapists
6	Physiotherapists
3	Chiropodists
2	Social Workers
1	Field Officer
49	Nursing Sisters

(19) *Administrative Staff*	
8	Typists
1	Clerk
3	Clerical Assistants
3	Driver/Gardeners
4	Cleaners

EXPANSION—SERVICES

The most significant expansions approved were:—

1. The addition of a Day Care Centre for the Mandurah Community Health Centre.
2. The extension of Busselton Community Health Centre services, to surrounding satellite towns.
3. The establishment of Health Education Resource Centres at Armadale and Perth as extensions of the Perth Health Education Resource Centre.
4. The development of the Manning Community Health Centre by effecting additions to the existing Manning Child Health Clinic, and the employment of allied health staff.
5. The establishment of a halfway house by the Alcohol and Drug Authority (this approval was subsequently converted to health counselling and dispensing service).

NEW PROJECTS

A wide range of new projects was commenced. The descriptions of the new projects approved for Community Health Programme funding in 1977/78 are as follows.—

Public Health Section

Cervantes Community Health Centre

A modified domestic dwelling from which will be provided salaried health services. The centre will primarily serve the population of Cervantes, which fluctuates seasonally between 400 and 1 000 or more.

Kwinana Community Health Centre

Construction of a purpose-built community health centre to provide salaried allied health and health-related welfare services. The centre will primarily serve residents of the Kwinana area.

State-wide Chiropody Service—country areas

Provision of a chiropody service for country people from a mobile caravan, or existing facilities if available. Initially to be introduced in the South West rural areas.

Hearing Conservation in Industry

Aims to measure, evaluate and control noise levels in industry to determine the effect of industrial noise on the work-force and to motivate management and employees in industry to conduct hearing conservation programmes and to promote the preservation of hearing.

Medical Social Worker, Asthma Foundation of W.A. Inc., Perth

Provision of health-related welfare services for asthma sufferers throughout the State, from rental premises.

Health Education Council—Port Hedland

Provision of health education services from the purpose-built Port Hedland Community Health Centre.

Health Education Council—Geraldton

Provision of health education services from the purpose-built Geraldton and Region Community Health Centre.

Pre-School Health Team, Perth

Screening of all children in day care centres for physical, behavioural and developmental abnormalities.

Fremantle Meeting Place

Purchase of a vehicle for a facility (provided by the Fremantle City Council) where migrants and others can meet. To serve residents of Fremantle (35 per cent migrants). Health related welfare services are provided from the Centre.

W.A. Deaf Society—Social Worker/Interpreter, Perth

Provision of a social worker, skilled in interpretation through manual communication, for the profoundly deaf.

Nullagine Community Health Centre

Provision of a caravan to accommodate visiting medical and allied health personnel, and a community health nurse based at Marble Bar to service Nullagine and region.

State-wide Maximisation of Resources

A State-wide survey to investigate the resources of Departmental buildings with a view to improving utilisation of existing facilities.

Lake King Mobile Clinic

A mobile health service unit to service an area of approximately 40 kilometre radius around Lake King. Salaried allied health services will be provided.

Central Resources Pool

Provision of salaried allied health, health-related and clerical support, to assist voluntary and charitable organisations and Government agencies.

Women's Refuge Section

Since 1974/75 the Nardine Women's Refuge and Warrawee have been supported by Community Health Programme funds. In the 1977/78 Commonwealth budget an amount of one million dollars was made available to develop new women's refuges throughout Australia. As a result of this initiative, the following women's refuges presented applications to the Community Health Programme for consideration:—

Ave Maria Women's Refuge

The Daughters of Charity of St. Vincent de Paul have been operating a night shelter for many years. The funds provide employment of a social worker, part time office assistant and some contingencies.

Byanda Emergency Lodge

This project provides crisis accommodation for women and children in time of physical violence.

City of Stirling Women's Refuge

This refuge will provide accommodation for women in crisis situation due to breakdown in family relationships where it has become untenable for women and children to maintain their present residences.

Murray Districts Women's Night Shelter

This shelter was to provide very short term accommodation. The main aspect was to have alternative accommodation available for women and children who have been turned out of their homes by the husband, and for those that must vacate the domestic household because they fear for their safety.

Rockingham Women's Refuge

The proposal provided for the conversion of the existing Mary Adamson Home at Rockingham to provide emergency accommodation for five women and their children.

Holyoake Women's Refuge

Proposed to establish and operate facilities to give emergency shelter, comfort and guidance to those women and children who experience a crisis situation brought about by continual or recurrent drunkenness and violence in the family home.

ACRAH Women's Refuge

The basic aim is to house, clothe, feed and provide basic medical and welfare assistance to homeless women and children (for whatever reason) and to endeavour to find permanent accommodation of their own.

Emmaus Women's Refuge

Provides accommodation for women and children in emergencies due to violence and drunkenness.

Mary Smith Night Shelter

This shelter provides refuge for women and their dependant children. Facilities provide counselling and aid from the appropriate agencies.

Approvals for these Refuges were finalised very late in the year and the implementation was commenced in December 1977. The nature of women's refuges varies in significant ways to the character of the majority of projects funded under the Community Health Programme generally. These projects are administered by voluntary and charitable organisations, some of which are very well established, e.g. Salvation Army etc. and others are the responsibility of groups that have formed for the specific purpose of providing a service of this kind.

Mental Health Section

Bentley

Provides a multi-disciplinary Community Mental Health Care Team and involves the provision of a psychiatric consultative, assessment and treatment service to a population of 175 000 people.

Brighton/Hove Complex

Provides a Day Centre, Assessment Centre and Clinical facilities for the intellectually handicapped.

Armadale Clinic

This Clinic provides an assessment and treatment psychiatric service for children and adults. It incorporates contact with youth groups and voluntary organisations.

Swan Clinic

Services provided include Diagnostic and Evaluation, crisis intervention, group counselling, Hostel and Hospital placement and individual counselling.

Graduate Welfare

This particular project provides assistance to Social Workers in assessment centres and community activities.

Graduate Assistant

Provides supervision of the Mental Deficiency Division Statistical Section.

Recovery/Grow

Provides widely decentralised groups for self-help programmes for persons requiring assistance with every day problems and is involved in rehabilitation programmes for persons suffering from stress.

On-going Projects

The following projects which were approved in previous years, continued to be developed during 1977:—

Public Health Sector

Home Care Services
Statewide Social Work, Extended Care
Mandurah Community Health Centre
Busselton Community Health Centre
Geraldton and Region Community Health Centre
South Hedland Community Health Centre
Handicapped Children's Assessment Centre
Carrellis
Women's Community and Health Centre
Teaching Health Centre
Health Education—Perth
Health Education—Fremantle
Lockridge Community Health Centre
Arthritis Community Service
Community Health Sisters
Respiratory Diseases Programme
Community Health Programme Secretariat
A.M.A. Students
Karratha Community Health Centre
Manning Community Health Centre (Pilot Study)
Remote Area Specialists Service
Lake Varley Community Health Centre
Southwell Child Health Complex
Koondoola Child Health Complex
Queens Park Child Health Complex

Women's Refuge Section

Nardine Women's Refuge
Warrawee Night Shelter

Mental Health Section

Psychiatric Health Centre
Domiciliary Services
Clinical Engineering
Clinic Team
Irrabeena Clinic
Pyrton Training Centre
Community Development Centre
Richmond Fellowship-Halfway House
Havelock Clinic
Fremantle Clinic
Community Psychology
Research and Review Psychology

Detailed reports concerning these projects are available from the Department, but the following aspects require special comment:—

(a) *Women's Health Centre*

Due to the organisations failure to maintain the project in a manner acceptable to the Department, funding was withdrawn on 15th September, 1976. In late 1976 and early 1977, several meetings were held with representatives of the newly formed Women's Health Centre Staff Association, with a view to transferring sponsorship of the Women's Health Centre project to this group. Community Health Programme funding of this project was resumed on 1st February, 1977 and an alternative Women's Health Centre (In West Perth) was opened to the public on 1st April, 1977. The services provided from the new Centre were developed progressively during the remainder of the year and results obtained justified the decision to re-establish the project.

(b) *Geraldton and Region Community Health Centre, South Hedland Community Health Centre and Child Development Centre*

New buildings were completed and services established within these three major projects during the latter part of 1977. The Geraldton and Region Community Health Centre was built at a cost of $1 317 000 and services were introduced progressively as from 31st October, 1977. The South Hedland Community Health Centre cost $1 403 000 and the first staff commenced duty on 4th July, 1977. The new Child Development Centre building established at a cost of $477 000 and staff transferred from temporary accommodation on 23rd September, 1977.

Operation Details of Projects

Health Centres provide monthly reports on their operation. An example has been picked at random for illustration. Lockridge is a small pilot Centre which could be classed as Type II on an ascending rating scale of I to IV. The tone of the report of this small Centre as well as the statistics and general information regarding Centre activities adequately show the work undertaken and how Centres operate to meet the particular needs of their Communities.

Lockridge Community Health Centre November/December Report

Figures covering the clinics held here and work carried out by the Professionals are as follows:—

November	Social Worker—		
		Clients	27
		Community Contact	93
		Liaison	73
	Occupational Therapist—		
		Clients	41
		Community Contact	43
		Liaison	33
	Community Nurse—		
		Clients	29
		Community Contact	88
		Liaison	70
	Family Planning Clinic		28
	Chiropody Clinic		45
	Group Room Attendance		472
December	Social Worker—		
		Figures incomplete. Currently on annual leave.	
	Occupational Therapist—		
		Clients	56
		Community Contact	83
		Liaison	32

Community Nurse—	
Clients	59
Community Contact	77
Liaison	97
Family Planning Clinic	20
Chiropody Clinic	31
Immunisation Clinic	97
Group Room Attendance	298

The Lockridge Community Health Centre staff situation at 31st December, 1977 was as follows:—

Secretary Co-Ordinator	Full Time
Typist	Full Time
Social Worker	Full Time
Occupational Therapist	Full Time
Community Health Nurse	Full Time
Two Cleaners	Part Time
Family Planning Clinic—	
One Doctor	One 3-Hour Session Per Week
One Nursing Sister	
Chiropody Clinic—	
Chiropodist	One 3-Hour Session Per Week
Immunisation Clinic—	
Doctor and Nurse in attendance	Bi-monthly, One Session

Chiropody Clinic

Attendance at this Clinic continues to be maximum numbers at each weekly session, and is fully booked three weeks in advance.

Family Planning Clinic

Figures show an increase in attendance at this Clinic for the month. Attendance weekly is now more evenly distributed compared to previous months when one week we would have eight patients and three the following week.

Immunisation Clinic

The final programme for 1977 was carried out on 7th December. Attendance was up on the previous two Clinics. It is considered that the good response shown to these clinics has proven the need for these sessions to continue in 1978.

Medical Practice

A meeting was held in November between Health Centres personnel and the doctors who will work in the Medical Centre. The purpose of the meeting was to talk about individual roles, and have a general discussion about expectations of a future working relationship. It was agreed to continue regular staff meetings as these would be a valuable contribution to an honest, amicable, working relationship between Health Centre staff and the medical group.

Doctors' Meeting with Community

One of the doctors expressed the desire to hold an informal meeting between the medical group and a cross-section of the community. Fifteen local residents showed eagerness to attend such a meeting. The community responded very well when asked to outline the needs of Lockridge in terms of medical care.

Christmas Party for Lockridge Pre-School Children

A very successful party was held at the Lockridge Community Hall and Oval on 8th December, 1977. Approximately one thousand people attended (600 children) to enjoy the entertainment and refreshments. Entertainment was provided by Fat Cat and Sandy, TVW 7, Puppet Show, CATS, Carol Singing from the local schools, horse-rides provided by Health Centre Nurse and Father Christmas, who handed the children a bag of sweets, lollipop, balloon and a novelty gift. Stalls were set up under gay beach umbrellas decorated with balloons. From these stalls children were given cakes, totalling 1 000, which were baked and donated by the mothers of Lockridge, sweets, icecreams, cool drinks and fruit. Good liaison was shown by residents of Lockridge and community workers. Donations exceeded those made last year. One Lockridge mother raised $90 from the raffle which she organised.

It was rewarding that mothers in the Claire Court Flats and Tulong Flats expressed interest in organising a Christmas Party for the individual blocks of flats and came along to the meetings to learn about the methods of organising such an event; and requested our assistance with any difficulties.

This annual event is good publicity for the Health Centre as a large number of people are involved.

SENIOR CITIZENS' CENTRES

During the year, six Senior Citizens' Centres were completed. The total capital cost for the six Centres was $1 146 550. The table hereunder shows details of cost sharing arrangements:—

Centre	Local Authority Contribution	State Government Contribution	Commonwealth Contribution	Total Cost
Corrigin	17 792	17 524	70 633	105 949
Mundaring	25 300	20 000	90 600	135 900
Gosnells	111 842	20 000	263 684	395 526
Northam	37 049	20 000	114 098	171 147
Fremantle	34 369	20 000	108 737	163 106
Bayswater	38 307	20 000	116 615	174 922
Total	264 659	117 524	764 367	1 146 550

Four other Senior Citizens' Centre projects were approved in June 1977. One of these projects was the Busselton Senior Citizens' Centre which was to be part funded in the 1977/78 financial year and the balance in the 1978/79 financial year. The amount of $55 856 was set aside for the 1977/78 financial year. Cost sharing arrangements for the four projects is shown hereunder:—

Centre	Voluntary Contribution	Local Authority Contribution	State Contribution	Commonwealth Contribution	Total Cost
Belmont	....	417	416	1 667	2 500
Glendowner	35 633	20 000	20 000	80 000	155 633
Boyup Brook	....	2 833	2 833	11 334	17 000
Busselton	....	43 333	20 000	126 667	190 000
Total	35 633	66 583	43 249	219 668	365 133

WELFARE OFFICERS

No new positions were approved during 1977. The number of approved positions still remain at eight, and occupied by Welfare Officers employed by the following:—

Swan Cottage Homes Incorporated
Senior Citizens' Welfare Association Inc., Victoria Park
City of Stirling (2)
City of Subiaco
Town of Canning
Shire of Belmont
Shire of Wanneroo

Currently eight applications relating to Welfare Officer positions are being held in Canberra awaiting approval under the State's Grants (Home Care) Act.

HOME CARE SERVICES

No new services were approved in 1977. Under the provisions of the State's Grants (Home Care) Act where a State expends an amount in connection with an approved Home Care Service, there is payable to the State, an amount equal to two-thirds of the amount so expended. Hereunder is a list of approved Home Care Services that receive an annual grant from the State Treasury. The amounts shown were paid in 1976/77 financial year.

	$
Perth Emergency Housekeeper Service	60 000
Volunteer Task Force	12 000
League of Home Help	6 000
Geraldton Home Help	2 000

AGED PERSONS' HOMES—FURNISHING SUBSIDY

An amount of $137 683.31 was paid out in furnishing subsidies to 14 eligible organisations establishing Aged Persons' accommodation, i.e. self-contained units, hostel units and nursing homes approved under the Aged or Disabled Persons' Homes Act or the Aged Persons' Hostels Act. The above Acts are Commonwealth legislation.

On 31st October, 1977 the Premier announced a relaxation of the rules in regard to payment of State Furnishing subsidy to eligible organisations who would have qualified for Commonwealth financial assistance, but unable to secure the assistance because of the limitations in funds.

Eligible organisations under the Aged or Disabled Persons' Homes Act, fall within the undermentioned categories:—

(i) Religious Organisations
(ii) Charitable or Benevolent Organisations
(iii) Ex-Servicemen's Organisations
(iv) Local Authorities

GERALDTON AND REGION COMMUNITY HEALTH CENTRE—EVALUATION SURVEY

In August 1977 a Community Health survey was undertaken in Geraldton to provide a basis for evaluation of the effects of the Geraldton and Region Community Health Centre which was about to be opened. The survey was conducted over a three-week period although most of the work was done in the first two weeks by a team of 17 interviewers. A total of 897 households were involved in the survey and a considerable amount of information was gathered to describe the characteristics of the population, their access to existing services and the use made of them. The information will be used to evaluate the performance and impact of the Geraldton and Region Community Health Centre, when a similar comprehensive survey is conducted, in perhaps five years' time.

Appendix VII

Pharmaceutical Services Branch

W. M. Griffiths, B. Pharm., F.P.S. (G.B.), M.P.S.
Principal Pharmacist

POISONS ACT AND REGULATIONS

With the coming into force of the Veterinary Medicines and Feeding Stuffs Act, corresponding amendments were made to the Poisons Act Regulations concerned with veterinary medicines. The Appendix of veterinary medicines normally reserved for veterinary prescription but allowed to be sold by a pharmaceutical chemist without prescription in an emergency or when it is not reasonably practicable for a stockowner to obtain a prescription has been updated in accordance with present-day veterinary practice and the needs of agriculture.

The list of poisons and hazardous substances required to be labelled with first aid measures has been revised in the light of recommendations by the National Health and Medical Research Council and the State Poisons Advisory Committee. Specific warning statements applicable to certain chemicals have been amended.

The drugs of addiction which dentists are authorised to procure and possess were reviewed by the Poisons Advisory Committee.

PESTICIDES

During the year, the Pesticides Advisory Committee received 142 applications for registration of pesticides; 84 were registered and 58 were still under consideration at the end of the year. One hundred and one registered formulations were cancelled or withdrawn.

The National Technical Committee on Agricultural Chemicals forwarded 98 submissions for examination for clearances of pesticides for use in Australia under the national clearance scheme. Thirty of these were new chemicals examined for the first time, and 68 were submissions requesting extensions of use of previously cleared chemicals on additional crops or against extra pests.

One thousand one hundred and forty-two pesticide formulations were registered as at 31st December, 1977.

Appendix VIII

Dental Health Services

J. L. Prichard, Dip.D.S., B.D.Sc., F.I.C.D.
Principal Dental Officer

This report covers the activities of the Dental Health Service for the year ending 31st December, 1977.

1. CLINIC SERVICE

1.1 Rural and Remote Areas

1.1.1 *Kimberley Region*

Regular clinics are maintained at: Wyndham, Derby and Broome, with visiting services to Kununurra, Halls Creek, Fitzroy Crossing, Koolan Island, Kuri Bay, and Missions at Kalumburu, Balgo Hills, Lombadina, Beagle Bay, La Grange and the Derby Leprosarium.

Major stations Sturt Creek, Gordon Downs and Nicholson are visited annually.

An aerodental service has been inaugurated, involving all stations in the Kimberley Region.

1.1.2 *North West Region*

Regular clinics are maintained at Port Hedland, Dampier, Karratha, Wickham, Exmouth, Paraburdoo, Tom Price and Newman; with visiting services to Goldsworthy, Shay Gap, Onslow, Pannawonica, Wittenoom and Shark Bay.

1.1.3 *Southern Region*

Regular clinics are maintained at Beverley, Ongerup and Three Springs; with visiting services to Morawa, Quairading, Jerramungup and Gnowangerup.

In addition to the above services, mobile road clinics provided services to the North East Goldfields (Trans Line), East Pilbara (Marble Bar, Nullagine), Murchison and Gascoyne areas (Meekatharra, Cue, Mt. Magnet, Yalgoo), and Southern Agricultural (Cascade, Condingup, Salmon Gums).

An aerodental service provided dental cover for remote regions including Giles Weather Station, Warburton Ranges Mission, Wingellina, Blackstone, Cosmo Newberry and Eyre Highway.

1.2 School Dental

1.2.1 *School Dental Therapy Clinics*

At 31st December, 1977, 180 Primary Schools were serviced by 69 therapy clinics. A total of 69 740 pre-school and primary children were eligible for dental care. This is 50·1 per cent of enrolled primary school children.

The geographical distribution of clinics:—

North West Region—10
South West Region—19
Metropolitan Region—40

1.2.2 *School of Dental Therapy*

Children from 18 schools in the vicinity of Mt. Henry training school and from 14 schools in the vicinity of Warwick training school attended for preventive dental services.

Enrolments for treatment were:—

Mt. Henry—2 753
Warwick—4 292

2. TRAINING COURSE FOR SCHOOL DENTAL THERAPISTS

2.1 First Year

Sixty trainees commenced their first year in February, 1977. Forty-five trainees satisfactorily completed the first year. Eight having resigned while four failed the course. Three are required to sit supplementary examinations.

2.2 Second Year

Forty-seven trainees successfully completed second year and will officially graduate on 1st February, 1978. Two trainees require extra tuition and should complete the course during the first term, 1978.

2.3 Acknowledgements

2.3.1 Principal Psychologist, Mental Health Service, Mr. R. Smith assisted in arranging the Human Relations course. Clinical Psychologists, Mr. G. Van Ierland and Mr. D. Mellor conducted Psychology and Human Relations lectures to first and second year trainees.

2.3.2 Dr. E. Mackay-Scollay, Head of Division of Microbiology, State Health Laboratories Service, assisted in arranging the Microbiology practical classes. Mr. M. Elliott assisted in conducting these classes.

2.3.3 The Health Education Council provided lectures on health education and topical social issues.

The assistance of these persons and organisations was most appreciated.

3. DENTAL HEALTH EDUCATION UNIT

3.1 Community Dental Health Education

Community dental health education continued through the school system and health agencies. This consisted of:—

Thirty-five lecture sessions to teacher training colleges.

Sixty lecture sessions to other health agencies.

Three inservice courses for teachers.

Close liaison with the Education Department and the Health Education Council has continued to ensure an integrated approach to community dental health education.

3.2 Assistance to Dental Health Service Personnel

3.2.1 Consultant services to assist the development of dental health education programmes by Dental Officers and School Dental Therapists.

3.2.2 Assistance in planning and conduct of dental health education courses for trainee school dental therapists.

3.2.3 Preparation and distribution of teaching aids for field clinics.

3.3 Kindergartens

The dental health education programme for mothers and children in kindergartens includes dental inspection of children for case finding and referral. Seventy-nine kindergartens were visited and 4 107 children screened for dental disease.

4. BUILDING PROGRAMME

4.1 Buildings Completed

Twenty-five fixed clinics and mobile therapy clinics were completed in 1977.

4.2 Planning for 1978

Finance for the construction of 24 fixed and mobile therapy clinics was approved in the State budget.

Fourteen clinics have been allocated to the metropolitan area and 10 allocated to country areas.

5. SUBSIDISED DENTAL CARE

Assistance towards the cost of dental care is provided for children, pensioners and other adults. Income and the number of dependants are the principal criteria in establishing eligibility.

Three thousand seven hundred and forty people were granted subsidies amounting to $320 314.68 representing a subsidy of 90·7 per cent of fees.

6. STAFF

Appointments made during the year resulted in a staff total of 486. Distribution of Staff at 31st December, 1977 was as follows:—

6.1 Administration

Dental Officers (8)
Therapists (2)
Clerical and General (23)
Wages (9)

6.2 Clinic Service

6.2.1 *Metropolitan Region*
Dental Officers (13)
Dental Therapists (67)
Dental Nurses/Assistants (46)

6.2.2 *Country Region* (*South West*)
Dental Officers (7)
Dental Therapists (34)
Dental Nurses/Assistants (25)
Wages (6)

6.2.3 *Rural and Remote Region* (*North West*)
Dental Officers (16)
Dental Therapists (18)
Dental Nurses/Assistants (42)
Wages (5)

6.3 Dental Therapy Training Schools

Dental Officers (13)
Dental Therapists (10)
Dental Nurses/Assistants (35)
Dental Technicians (2)
Trainee Therapists (96)
Clerical and General (4)
Wages (5)

Appendix IX

Nursing Administration Section

Miss E. L. Bohan, F.C.N.A., D.N.A.
Principal Director of Nursing

1. NURSING SERVICE

Apart from those areas of the state which do not attract nurses because of isolation or extremes of climate and must be staffed from the Emergency Nursing Service, staffing levels even in country hospitals have not been so difficult to maintain. Indeed in the metropolitan area, job opportunities for Registered Nurses and Registered Nursing Aides have been restricted to specialist fields of nursing.

1.1 Emergency Nursing Service

Appointments 1/1/77 to 31/12/77—

6 months	16
12 months	32
Total	48

Number employed at 31/12/77: 41

1.2 Staff

Notable retirements this year have been:

Miss Margaret E. Beard, Principal Director of Nursing since 1970, and highly esteemed and respected by colleagues and associates all over the state.

She was awarded the Order of Australia in the New Year Honours 1978. Miss Beard was succeeded in April 1977 by Miss E. L. Bohan.

Mrs. Beryl Parnell retired as Director of Nursing, Sunset Hospital after a lifetime of service in Child Health and in hospitals. Mr. John Hakkaart was appointed in her place.

The Queen's Silver Jubilee Medal was awarded to several nurses:—

Miss Margaret Beard
Mrs. S. Canning, Matron—Leonora
Miss D. McLennan, Kojonup Hospital
Sister M. Camille, formely Derby Leprosarium and Community Health Service
Miss M. Ross, Community Health Service, Halls Creek

1.3 Community Nursing

A major activity has been continuation of the review of the practice of Community Nurses employed under several industrial Awards with the object of drawing up a new combined Award.

In the various sectors of Community Nursing, the past year has been one of development, consolidation, plus inevitable problems.

1.3.1 *Chest and Tuberculosis Services*

The School Vaccination programme has progressed and 19 000 children were given B.C.G.

Home visits for supervision of chemotherapy occupied much of the time of the visiting nurses. These visits are important in view of the fact that patients have only a short period in hospital and anti-tuberculosis drugs are complex.

Treatment of Asthma

To promote this area, a Registered Nurse has been appointed solely to work in this field.

Seventeen registered nurses are employed in these services, and one retirement from their ranks after 28 years service was Sister J. McNamara.

1.3.2 *Occupational Health*

Although the number of Registered Nurses in this area has remained at two, they have become increasingly occupied in surveys conducted as part of preventive care for certain groups of workers, particularly those employed in dusty environments such as coal mines, asbestos factories, sandblasting and foundries.

1.3.3 *State Health Laboratories*

Only one Registered Nurse is now required here.

1.3.4 *Special Treatment Clinic*

One of the five Registered Nurses in this area is involved in clinical sessions which have commenced at Sir Charles Gairdner Hospital.

1.3.5 *Child Health Service*

One hundred and twenty-two Registered Nurses are employed in this Service, and there are still some vacancies in country centres.

1.3.6 *School Health Service*

This Service has expanded during the year and there are now 112 Registered Nurses employed in carrying out required screening and assessment programmes in schools as follows:—

Government Primary:		
Metropolitan	242	
Country	254	
		496
Government Secondary:		
Metropolitan	47	
Country	25	
		72
District High Schools:		
Country	52	
		52
Total:		620

There is a School Health Nurse now in 18 country centres, and there is a School Health Nurse attached to the staff of 36 senior high schools in metropolitan and country areas. As well there are seven nurses based at Disadvantaged Schools.

1.3.7 *Community Health Services*

Current Staff

Registered Nurses	168
Nursing Aides	14
Field Assistants	55

Field Nurses assisted with the preliminary and follow up treatment associated with medical audits in the Eastern Goldfields, Southwest, Kimberley and Pilbara.

The influx of refugees placed an additional load on metropolitan and to a lesser extent Kimberley staff. A total of 375 "boat people" arrived in Perth during the year.

Improved accommodation for staff has been achieved by means of self-contained flats at Fitzroy Crossing, Balgo Hills, La Grange, Roebourne, Halls Creek, Kalgoorlie, Laverton, Leonora.

2. NURSE EDUCATION

2.1 Helen Bailey Scholarship was this year awarded to Miss Robin Burns, Senior Theatre Sister, Orthopaedics, Royal Perth Hospital, to undertake three months' study and practice in her specialty.

2.2 Nursing Aide Programmes

Once again applicants for nursing aide training have considerably exceeded the number of vacancies in Schools of Nursing. The one exception is Derby which lacks in local applicants, but sufficient are willing to come from Perth to make up the required numbers.

3. NURSING RECRUITMENT

Job opportunities for Registered Nurses and Registered Nursing Aides continue to be restricted, particularly in the metropolitan area, so that an active programme of recruitment has again not been necessary.

3.1 Nursing Employment Section

As in previous years, nursing appointments have been made to hospitals throughout the State, as well as advice, counselling and relevant information per media, personal interview, telephone, telex, correspondence.

In addition, advertising of nursing positions, and arrangement of airline bookings for nursing staff are responsibilities of the Nursing Employment Officer.

2. HOSPITAL INSPECTIONS

Departmental	45
Country Board	49
Nursing Homes	210
Private General and Midwifery Hospitals	19
	323

5. PRIVATE HOSPITALS AND NURSING HOMES

5.1 Number of beds at 31/12/77:—

	beds
General	1 213
Maternity	364
Nursing Homes	4 226

5.2 New hospitals/additions

Glengarry Hospital (General and Midwifery)	80
Stirling Hospital (General)	9
Kaleeya Hospital (General)....	2
Belmont Nursing Home	52
Maurice Zeffert Nursing Home	3
Martindale Nursing Home	6

5.3 Nursing Homes Closed

Deva	23
Eleanor Merle	25

6. DOMICILIARY MIDWIFERY

Numbers of home births, though still relatively low, have increased in recent years:

1973—2 1974—1 1975— 5 1976—14 1977—17

CONCLUSION

I wish to express appreciation of the high standards of practice maintained by nurses in hospitals and community areas, and of the courtesy and co-operation extended to the Nursing Section by other departmental personnel.

Appendix X

Division of Occupational Health

Dr. A. G. Cumpston, M.B., B.S., M.Sc., M.App.Sc.
Director

OCCUPATIONAL HEALTH

GENERAL

Considerable investigation has been undertaken to appraise the need for group occupational health services where there are large concentrations of small industries. Attention is currently centred on Welshpool and discussions continue concerning the feasibility of establishing a group occupational health service in this area. Several companies and Government departments have made enquiries regarding the establishment of an occupational health service and appropriate advice and assistance has been provided by the Division.

An additional Occupational Health Physician was employed in August, 1977, and attached part time to the West Australian Meat Commission. He will also be required to promote occupational health services in other Government Departments and instrumentalities.

MEDICAL EXAMINATIONS OF MINERS AND WORKERS IN DUSTY TRADES

In accordance with practice in previous years group surveys have been conducted in co-operation with the Perth Chest Clinic.

Four thousand three hundred and sixteen men who entered the mining industry during 1977 were medically examined, as required by the Mines Regulation Act, 1946–74.

Seven thousand four hundred and fourteen miners were re-examined as required by the Mine Workers Relief Act, 1932–40, 242 were found to be suffering from silicosis. Eighteen of these were new cases and this number, expressed as a rate per 10 000 examinations, is consistent with the lower incidence rates observed in recent years, (Fig. 1). No new cases of asbestosis were detected and, for the fourth successive year, there were no newly diagnosed cases of tuberculosis in miners.

Figure 1

Year	Total No. of examinations	Incidence of new cases of silicosis	Rate per 10 000 examinations (silicosis)
1925–29	13 800	847	614
1930–34	19 600	380	194
1935–39	34 100	111	33
1940–44	29 000	238	82
1945–49	26 000	293	113
1950–54	29 400	274	93
1955–59	30 300	259	85
1960–64	36 377	409	112
1965–69	36 477	196	53
1970–74	24 122	119	49
1975	8 696	35	40
1976	5 788	20	35
1977	7 414	18	24

During the year four new cases of mesothelioma were detected and a Mesothelioma Register was commenced. To date, 34 cases have been recorded, 28 of which were associated with prior occupational exposure to blue asbestos at Wittenoom.

Seven hundred and seventy-five Collie coal miners were x-rayed and 257 of these had respiratory function tests. There were no new cases of coal workers' pneumoconiosis.

Eight hundred and seventy-two workers in other dusty trades, including sandblasting and foundry work, were examined. Three cases of probable silicosis were detected.

The Division, through the Mines Ventilation Board and the Perth Chest Clinic, has actively promoted a co-ordination of effort to achieve routine measurement, evaluation and control of dust exposure in the mining industry. It will now be possible to correlate the records of occupational exposure to dust with the findings of medical examinations of mine workers.

HEARING CONSERVATION

The task of writing regulations for hearing conservation in industry was completed late in 1977. The draft regulations will be submitted to the Noise and Vibration Control Council early in 1978.

For many years the Division has assisted industrial enterprises to promote hearing conservation. The existing programme in the Goldfields was maintained and 232 audiometric tests were completed. In various other locations an additional 105 examinations were conducted on behalf of small industries. However, it is now the policy of the Division to encourage and assist management in the larger enterprises to assume full responsibility for hearing conservation. Specialist advice for this purpose is being increasingly sought and is provided by the Division.

PESTICIDES

During the year 136 companies were either registered for the first time or re-registered as commercial pest control firms. Seven companies were registered as commercial fumigation firms and another 11 firms submitted men for fumigation licences in order to carry out their own fumigations.

In the pest control industry there are 305 licensed employees.

Blood tests to check on safe usage of pesticides were carried out on selected operators and when required by firms. Investigations and repeat tests were made following indications of undue absorption.

Two men exposed to arsenic in sheep dip manufacture were taken off work.

Assistance was given to the Technical Extension Service of the Education Department in running a course for pest control operators. The course was well received and 26 students passed the examination. It is expected that similar courses will continue each year.

LEAD WORKERS

Tests and supervision of men engaged in work involving exposure to lead were carried out in conjuction with the Department of Labour and the Mines Department. A total of 214 urine tests and additional blood tests as required were carried out by the Government Chemical Laboratories to determine lead exposure. During the year nine workers were temporarily removed from occupational exposure to lead.

MERCURY

Routine testing of men exposed to mercury in industry was carried out and a total of 61 urine tests were carried out. No excessively high levels among these workers were found.

FLUORIDE

Workers engaged in water fluoridation were given urine tests and visits were made to reservoirs to check on general safety precautuions. Urine tests were all within normal levels.

Some modifications to fluoridation plants have been recommended and carried out as a result of the visits.

ASBESTOS

Following publicity on hazards associated with asbestos, the Division inspected many premises which had previously been sprayed with limpet asbestos. Where damaged asbestos was noted air sampling for asbestos in air was maintained for an extended period of time.

Air tests all showed low levels of airborne fibre or no fibres at all. In order to improve the long term situation it was decided to recommend removal of exposed blue asbestos and the treatment or sealing of exposed damaged, or loose, white asbestos surfaces. In the case of well-finished, undamaged white asbestos surfaces, no action was recommended.

SANDBLASTING

Sandblasting was carried out on a very much reduced scale due to limited industrial development. Unheralded visits were made to premises and air-testing carried out to determine air flow to helmets. The standard of protection was not always maintained at a satisfactory level, and more supervision will be necessary, particularly with increased constructional activity. The exposure of other workers, who work daily in dusty surroundings caused by sandblasting, remains a source of some concern.

During the year the use of garnet sand, a non-siliceous material, was investigated and it was found to be a satisfactory alternative to silica sand.

KINETICS

Lecture/seminar services, advice and appropriate assistance were provided as required for numerous hospitals, government departments and instrumentalities and firms in private industry.

An office chair to reduce stress in office workers has been designed and tested to the point of production.

An economic method of establishing percentage binaural hearing loss was designed, saving the Division a planned expenditure of $5 000 on computer services.

An audio-visual sequence relating to stress in offices has been produced.

SAFETY

The Division has assisted the Medical Department's Safety in Hospitals Committee to organise and conduct seminars on hospital safety and disaster planning at regional hospitals.

SOCIETIES

The Division has been responsible for the establishment of the Western Australian Branch of the Australasian Society of Occupational Medicine which now has 21 professional members, and provided the stimulus for the formation of a new non-professional society, the Occupational Health Society of Australia.

EDUCATIONAL

The Division, in co-operation with the Occupational Nurses' Association conducted six one-day workshops during the period July-December. Attendance ranged from 25–30 nurses at all sessions.

Talks on various aspects of occupational health were given at the Western Australian Institute of Technology, Muresk Agricultural College, Co-operative Bulk Handling, Westrail, State Energy Commission, Telecom, Hospitals, Ships' Captains' Seminar, mines in Kalgoorlie, the Industrial Foundation for Accident Prevention and on the radio.

A one-day seminar on occupational health problems was held at Jerramungup for the farming community.

CLEAN AIR

The activities of the Section are described under the following headings:

A. Monitoring of Air Pollutants
B. Specific investigations and testing
C. Advising of Air Pollution Control and Complaints
D. Education
E. Statutory duties

MONITORING OF AIR POLLUTANTS

Dust Monitoring

The Central Electricity Research Laboratory directional dust gauge (C.E.R.L.) and the standard New South Wales glass funnel deposit gauge are used in Western Australia.

Perth Area

At the end of 1977, 24 C.E.R.L. directional dust gauges were in use in the metropolitan area. They were located as follows:

- City Beach
- East Perth
- Lathlain Park
- Rivervale
- Welshpool (2)
- Perth Airport
- Kewdale (2)
- Maddington (2)
- Gosnells (2)
- Wanneroo (3)
- Hazelmere
- Herne Hill
- Kwinana (4)
- Munster (2)
- Naval Base

Two gauges were installed in Gosnells to monitor quarry dust and a gauge installed in Hazelmere to monitor dust from stock holding paddocks. Four C.E.R.L. gauges were installed near the Bulk Cargo Jetty, Kwinana, for surveillance of wind blown dust during the unloading of rock phosphate and sulphur from ships. Two gauges were installed in the Munster area to measure dust, allegedly coming from a nearby cement works.

For results see Appendix A.

The results from deposit gauges sited at City Beach, East Perth, Perth Airport and Welshpool are shown in Appendix B.

Port Hedland

Five C.E.R.L. gauges were maintained in Port Hedland during 1977. They were located as follows:

Gauge No.	Location
1	Anderson Street, Port Hedland
2	Howe Street, Near Hospital, Port Hedland
4	Cooke Point, Port Hedland
5	Leslie Salt, Redhill
6	Stanley Street, South Hedland

The dust samples from each site were collected by officers of the Shire of Port Hedland and sent to the Section's laboratory in Perth where they were analysed for iron, expressed as $Fe_{2}0_{3}$, every second month.

For results see Appendix C.

Cape Lambert/Dampier/Karratha

Eight C.E.R.L. dust gauges were maintained in the area during 1977.

Gauge No.	Location
1	Port Area, Port Sampson
2	Immediately south of the Port area
3	North of Wickham Town site
4	South of Wickham Town site
5	Parker Point, Dampier
6	Bowling Club, Dampier
7	Karratha Airport
8	Fire Station, Karratha

The Health Surveyor of the Shire of Roebourne has continued to collect the dust samples and maintain the gauges in the area and forward the samples to Perth for processing and chemical analysis.

For results see Appendix D.

High Volume Sampling, Bunbury

Following complaints of fly-ash from the Bunbury power station, a high volume dust sampler was installed at the Bunbury Port Authority offices near the harbour. The sampler was run every sixth day to obtain statistically representative average dust levels.

For results see Appendix E.

Sulphur Dioxide and Particulate Monitoring

Perth Area

Monitoring for sulphur dioxide and smoke has continued in the metropolitan area. New sites at Rockingham, Hillman and Munster were introduced during the year. The Division wishes to thank the residents of many areas who continue to assist the Clean Air Section in having and operating these sampling stations in their own homes.

For results see Appendices F and G.

Kalgoorlie

Monitoring for sulphur dioxide in Kalgoorlie was discontinued in September 1977. Western Mining Corporation has taken over monitoring for sulphur dioxide on an extended scale in the Kalgoorlie area.

For results see Appendices H and I.

Pinjarra

Monitoring for sulphur dioxide at Pinjarra and at a site to the east of the alumina refinery was maintained in co-operation with the refinery management during 1977.

For results see Appendix J.

Oxides of Nitrogen Monitoring

Sampling sites at 57 Murray Street, Perth, and Queenslea Drive, Claremont, have continued to be operated on a 24-hour basis throughout the year.

For results see Appendix K.

Hydrogen Sulphide Monitoring

There were no significant emissions of hydrogen sulphide recorded at a site on the boundary of the nickel refinery at Kwinana.

Motor Vehicles

Monitoring for pollutants was continued at 57 Murray Street and at the corner of William and Murray Streets, Perth.

The results are shown in Appendices L, M and N.

Lead was determined at 57 Murray Street, Perth, on a regular basis.

For results see Appendix O.

SPECIFIC INVESTIGATIONS AND TESTING

Fluorine

Superphosphate Works

The six superphosphate manufacturing plants were tested during the year for fluorine emissions.

For results see Appendix P.

Brick Works

Static monitoring using lined filter paper was repeated in the Midland area during the 1976/77 vineyard growing season. Damage to some of the grape vine leaves was observed, but to a much less degree than during the previous summer.

Static Fluoride Monitoring Sites:—

1. Sandalford's Winery
2. In vines near old homestead
3. In vines near O'Connor's boundary
4. On river bank between brickworks and old homestead
5. On O'Connor's boundary
6. Corner West Swan Road and Bertram Road

For results see Appendix Q.

Further testing of a pilot fluoride scrubber at a brickworks at Armadale was carried out. Tests indicated that the unit would easily achieve ninety per cent. efficiency for the removal of fluoride from kiln gases.

Car Park Testing

Testing of public car parks for the exposure of attendants to carbon monoxide was conducted at the request of the Perth City Council.

For results see Appendix R.

Kwinana Air Modelling Study

The Clean Air Section set up the base stations at Wattleup and Rockingham during the year. Uufortunately, difficulties were experienced with the data logging systems and the commencement of the study has been delayed.

Miscellaneous

The Clean Air Section continued to assist other Government Departments, Local Authorities and private companies when called on throughout the year.

ADVISING ON AIR POLLUTION CONTROL COMPLAINTS

The number of written and telephoned complaints increased during the year due to dust, odours and fumes from a wide variety of industries. Improvements in the by-products plant and the waste water treatment plant at the Midland Abattoirs led to a dramatic reduction in complaints of odour from this source. There were still frequent complaints of dust and odour received from residents near a cement works, situated in the South Coogee area. Most complaints arise from the unfortunate siting of residential areas too close to certain dusty and odorous industries.

Many enquiries were received by the Section from members of the public and from students for information and material for projects.

EDUCATION

Lectures were given during the year to various professional organisations and educational institutions.

STATUTORY DUTIES

All meetings of the Scientific Advisory Committee and Air Pollution Control Council were attended. Numerous reports have been prepared for the Committee and Council by the Senior Engineer and his staff.

Routine inspections and special inspections of industrial premises are carried out by the Section's officers as required by the Committee and Council.

Members of the staff continue to represent this Department on National and State bodies. Expanding surveillance requirements and statutory duties have continued to increase the Section's work load.

NOISE ABATEMENT

COMMUNITY NOISE

Wherever possible the abatement of noise nuisance has been achieved through co-operation with local authorities and the use of persuasive rather than regulatory measures.

A pilot community noise survey has been commenced and will be continued as time permits.

Difficulties have been experienced with the application of the Noise Abatement (Annoyance of Residents) Regulations with respect to certain classes of noise nuisance. These Regulations have been revised and are currently being considered by the Noise Abatement Advisory Committee and the Noise and Vibration Control Council.

The Claremont Speedway Regulations came into operation on the 1st January, 1977. They provide for control over the noise emission of Vehicles and the closing time of Speedway operations.

An increasing number of complaints of nuisance from traffic has been received and discussions on this subject have been commenced with the Road Traffic Authority and the Interstate Noise Committee.

Other matters being considered by sub-committees of the Noise Abatement Advisory Committee are the noise nuisance created by burglar alarms and the production of a planning document to assist Town Planning officers, developers, and local authorities.

The Domestic and Industrial Appliances Sub-Committee has published a document intended for installers and suppliers of airconditioning units entitled: "Predicting and controlling the outside sound levels of airconditioning units".

An exemption under the Noise Abatement Act for Pile Driving with provision for specific conditions of operation was extended for an additional period of 12 months.

The control of construction noise generally is also receiving attention.

INDUSTRIAL NOISE

The writing of draft Regulations to promote hearing conservation in industry has been completed and the draft referred to the Noise and Vibration Control Council.

A mobile audiometry van has been constructed. The possession of this van and the projected appointment of a team of four officers will permit expansion of the Division's activities in this field, and provide a service directed to assisting small industries to establish hearing conservation programmes.

STANDARDS

Divisional officers have contributed to the development of uniform standards throughout Australia through participation in the activities of the Standards Association of Australia, the Interstate Noise Control Committee and the Motor Vehicle Noise Technical Advisory Committee.

EDUCATION

Several successful short courses in noise abatement and audiometry have been conducted by the Division.

In co-operation with the Western Australian Institute of Technology and W.A.I.T. AID Pty. Ltd., Divisional officers have contributed to the planning and conduct of training courses for audiometrists, noise inspectors, executives and nurses.

NOISE LABORATORY

The Noise Laboratory facilities have been improved to include the capacity to calibrate audiometers and sound level meters and thus provide the service required by the Noise Abatement (Annoyance of Residents) Regulations and the draft Regulations for the Conservation of Hearing in Industry.

APPOINTMENT OF NOISE INSPECTORS

There are now 22 Local Noise Inspectors and one State Noise Inspector appointed under the Noise Abatement Act. There were seven new Noise Inspectors appointed during the year.

APPENDIX A

DUST TESTING PROGRAMME—PERTH METROPOLITAN AREA 1977

Mean total dirtiness* for the twelve months period January–December, 1977

Gauge	Total Dirtiness	Gauge	Total Dirtiness
City Beach	1·6	Herne Hill	3·8
East Perth	2·0	Welshpool 2	3·7
Lathlain Park	1·9	Wanneroo 1	1·2
Rivervale	3·1	Wanneroo 2	1·5
Perth Airport	2·0	Wanneroo 3	1·6
Kewdale 1	2·7	Kwinana 2	6·5
Kewdale 2	5·5*	Kwinana 3	4·5
Maddington 1	4·6	Kwinana 4	3·0
Maddington 2	2·9	Kwinana 5	4·6
Gosnells 2	2·2†	Munster 1	5·0
Gosnells 3	3·0†	Munster 2	3·7
Hazelmere	6·4‡	Naval Base	4·5*

* 6 months only
† 7 months only
‡ 8 months only

APPENDIX B

DEPOSIT GAUGES 1977

Deposition (milligrams per square metre per day)

Sampling Point	Total Insolubles	Total Inorganic
Belmont	41	29
City Beach	25	15
East Perth	38	24
Welshpool	58	41

APPENDIX C

DUST TESTING PROGRAMME—PORT HEDLAND 1977

Mean total dirtiness and mean per cent iron ore in total dust from dust gauges for the twelve months period January–December 1977.

Gauge No.	Location	Total Dirtiness	Per Cent Iron Ore
1	Anderson Street, Port Hedland	18·9	52
2	Howe Street, near Hospital, Port Hedland	9·8	41
4	Cooke Point, Port Hedland	4·1	11
5	Leslie Salt, Redhill	5·5	13
6	Stanley Street, South Hedland	2·8	6

APPENDIX D

DUST TESTING PROGRAMME—CAPE LAMBERT/DAMPIER/KARRATHA 1977

Mean total dirtiness and mean per cent iron ore in total dust from dust gauges for the twelve months period January–December 1977.

Gauge	Total Dirtiness*	Per Cent Iron Ore	Gauge	Total Dirtiness*	Per Cent Iron Ore
1	2·5	....	5	6·0	46
2	2·9	....	6	5·0	29
3	1·7	....	7	8·2	13
4	2·1	....	8	3·7	16

Gauges—1, 2, 3, 4 Cape Lambert
5, 6 Dampier
7, 8 Karratha

* C.E.R.L. Dust Gauge

APPENDIX E

HIGH VOLUME SAMPLING—BUNBURY

(All results in micrograms per cubic metre)

1976	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	123	161	58	69	65	48
Highest Daily Reading	160	224	67	108	146	73

Annual Arithmetic Mean 87

1977	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	99	58	39	90	134	105	137	79	65	60	76	42
Highest Daily Reading	165	89	43	110	222	171	161	85	88	71	67	57

Annual Arithmetic Mean 82

APPENDIX F

METROPOLITAN SULPHUR DIOXIDE CONCENTRATIONS 1977

(All results expressed in micrograms per cubic metre)

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Seven Highest 24 hr Values for Year							Annual Average
Perth	19	16	12	14	4	12	7	2	4	8	8	13	98	66	58	55	49	45	44	10
Banganup	21	21	22	7	3	1	1	3	6	5	9	25	156	88	86	81	76	74	74	10
Bentley	15	10	6	8	7	6	6	2	3	3	5	14	78	73	44	41	40	36	34	7
Claremont	8	4	4	6	3	2	0	1	1	3	4	5	40	31	27	25	22	21	21	3
Inglewood	9	2	2	3	1	0	0	1	1	4	2	7	38	36	24	22	19	19	16	3
Medina	3	2	1	3	5	2	7	3	3	5	1	1	41	38	36	34	28	27	27	3
Munster	....	....	....	....	....	....	....	1	1	4	7	6	45	42	23	21	20	16	15	....
Orelia	4	4	3	1	1	0	0	2	1	3	2	1	48	40	29	18	17	14	12	2
Rockingham	....	....	....	....	14	4	5	1	1	6	1	1	53	44	38	25	25	25	24	....
Wembley Downs	6	4	2	4	0	1	1	0	1	2	3	3	32	29	20	17	15	15	15	2
Hillman	....	1	1	2	1	1	1	1	2	2	1	3	22	10	10	9	9	9	9	1

WORLD HEALTH ORGANISATION RECOMMENDED LONG-TERM GOALS
Sulfur oxides—British Standard Procedure
Annual Mean—60μg/m³
98% of observations below 200μg/m³

APPENDIX G

METROPOLITAN SMOKE READINGS 1977

(All results expressed in micrograms per cubic metre)

Site	Annual Average	Site	Annual Average
Perth	4	Medina	2
Banganup	3	Munster	3*
Bentley	3	Orelia	2
Claremont	3	Rockingham	2†
Inglewood	5	Wembley Downs	4
		Hillman	2

* 5 months only
† 8 months only

APPENDIX H

KALGOORLIE SULPHUR DIOXIDE CONCENTRATIONS 1977

(All results expressed in micrograms per cubic metre)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	....	0	0	0	0	0	0	0	0	....	....	....
Maximum Hourly Average	....	43	29	0	0	0	0	0	0	....	....	....
Maximum Daily Average	....	2	2	0	0	0	0	0	0	....	....	....
Minimum Daily Average	....	0	0	0	0	0	0	0	0	....	....	....

APPENDIX I
BOULDER SULPHUR DIOXIDE CONCENTRATIONS 1977

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Seven Highest 24 hr Values for Year							Annual Average
Boulder	8	8	10	21	9	3	3	2	3	2	10	4	230	124	91	78	57	44	37	7
Unit 1	8	8	14	7	3	1	2	0	2	2	2	2	32	26	26	26	21	19	19	4
Unit 2	5	13	7	1	5	0	0	0	0	3	2	2	66	30	17	15	12	12	12	3

APPENDIX J
PINJARRA SULPHUR DIOXIDE CONCENTRATIONS 1977

(All results expressed in micrograms per cubic metre)

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Seven Highest 24 hr Values for Year							Annual Average
Pinjarra Townsite	1	0	1	1	0	0	0	1	0	1	2	1	10	10	9	7	7	7	6	1
Darling Ranges	1	1	1	1	0	0	0	0	1	2	2	....	14	11	10	6	4	4	4	1

APPENDIX K
METROPOLITAN OXIDES OF NITROGEN CONCENTRATIONS 1977

(All results expressed in micrograms per cubic metre)

Site	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Highest 24 Hour Average	Lowest 24 Hour Average	Annual Average
Perth— 57 Murray Street	70	55	61	57	131	131	127	46	69	61	76	54	321	0	78
Claremont— Cnr. Queenslea Drive and Stirling Highway	36	40	49	53	62	98	92	59	103	45	61	25	385	9	60

APPENDIX L
CARBON MONOXIDE AT 57 MURRAY STREET, PERTH 1977

(Results expressed in parts per million)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	1·3	1·2	0·8	1·0	0·9	1·5	1·5	1·2	1·2	1·0	0·8	0·9
Highest 1 Hour Average	3·0	5·0	4·0	10·0	8·0	11·0	15·0	10·0	5·0	5·0	4·0	3·5
Highest 8 Hour Average	2·4	2·7	2·1	4·1	2·3	5·5	7·8	5·3	3·0	3·0	2·2	2·0

Yearly Average 1·1 ppm

APPENDIX M
CARBON MONOXIDE—CNR. WILLIAM AND MURRAY STREETS, PERTH 1977

(Results expressed in parts per million)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	....	....	....	....	....	2·6	3·2	3·1	3·1	3·0	3·7	3·4
Highest 1 Hour Average	....	....	....	....	....	23·0	18·0	15·0	18·0	12·0	12·0	12·0
Highest 8 Hour Average	....	....	....	....	....	14·5	11·0	9·3	12·1	7·8	8·5	9·6

Yearly Average 3·2 ppm

APPENDIX N
TOTAL HYDROCARBONS AT 57 MURRAY STREET, PERTH 1977

(Results expressed in parts per million)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	1·7	1·7	1·8	1·9	2·1	2·1	1·9	1·9	2·0	1·9	1·9	1·7
Highest 1 Hour Average	2·5	2·9	3·7	6·5	5·9	6·1	6·0	3·7	3·4	3·0	3·0	3·4
Highest 8 Hour Average	2·2	2·3	3·3	3·5	3·6	3·9	3·8	2·6	2·7	2·5	2·4	2·5

Yearly Average 1·9 ppm

APPENDIX O

LEAD —24HOUR EXPOSURE TESTS TAKEN AT 57 MURRAY STREET, PERTH 1977

(Lead expressed in micrograms per cubic metre)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Monthly Average	0·4	0·5	0·7	1·4	1·4	1·3	1·2	0·6	0·7	0·4	0·5	0·6
Highest 24 Hour Average	0·6	0·8	1·9	4·1	2·7	2·4	3·0	1·9	1·2	0·9	1·3	1·1
Lowest 24 Hour Average	0·2	0·2	0·1	0·7	0·7	0·7	0·5	0·2	0·4	0·1	0·2	0·4

Yearly Average	0·81
Yearly Highest Average 24 Hour Sample	4·1
Yearly Lowest Average 24 Hour Sample	0·1

Height of sampling point above road surface—3m.
Distance of sampling point from centre line of road—24m.
Method of sampling—low volume continuous filter.

APPENDIX P

FLUORIDE EMMISSIONS FROM SUPERPHOSPHATE WORKS

Location	Kilograms/hr of Fluoride
Albany	0·09
Bunbury	0·57*
Bayswater	0·19
Esperance	0·07
Geraldton	0·16
Kwinana	Not done

* During the period of test the factory was using up the remains of a high fluoride phosphate rock.

APPENDIX Q

1977 STATIC FLUORIDE MONITORING

(micrograms fluoride)

Direction of Site from Source Site No.	W 1	W 2	NW 3	W 4	NW 5	W 6
1st Sampling (19/11/76)	29	26	44	32	41	30
2nd Sampling (15/12/76)	33	18	27	44	....	31
3rd Sampling (12/1/77)	37	29	41	42	120	31
4th Sampling (8/2/77)	41	21	37	38	58	34

APPENDIX R

CARBON MONOXIDE MONITORING IN MULTI STOREY CAR PARKS FROM NOVEMBER 9-19, 1977

(All results expressed in p.p.m.)

Site	Date	Average Co During Period Car Park Open	Highest Hourly Co Exceeding 50 p.p.m.
No. 5 Car Park, Hay Street, Perth	9/11/77	29	79
	10/11/77	30	77
	11/11/77	36	106
	18/11/77	47	104
	19/11/77	9	....
No. 7 Car Park, Terrace Road, Perth	14/11/77	14	72
	15/11/77	9	....
	16/11/77	8	....
	17/11/77	6	....

Appendix XI

State X-Ray Laboratory

B. E. King, M.Sc., B.Sc.
Physicist in Charge

INTRODUCTION

The Physics Division of the State X-Ray Laboratory is responsible to the Radiological Council for the administration of the Radiation Safety Act, 1975. The Division provides the necessary administrative and technical services and, as part of a programme aimed at ensuring that radiation is used safely, the Division provides advice on radiation physics and radiation protection, calibrates x-ray equipment and radiation monitoring instruments, conducts lectures and short courses on radiation safety and provides a film badge radiation monitoring service. The work of the Radiological Council and the Physics Division of the State X-Ray Laboratory is described in more detail in this report.

RADIOLOGICAL COUNCIL

Under the Radiation Safety Act, the Minister for Health has appointed a committee of experts, the Radiological Council, to regulate the use of radiation. The Council consists of the following members:

Chairman: Dr. J. C. McNulty, Commissioner of Public Health and Medical Services

Members: Dr. J. Glancy, Radiologist, Dr. M. Quinlan, Nuclear Medicine Specialist, Mr. R. W. Stanford, Physicist, Mr. G. E. Bennett, Radiation Engineer, Dr. E. N. Maslen, Representative of the Interests of Tertiary Institutions, Dr. A. Cumpston, Occupational Health Physician.

Deputies have been appointed to all members with the exception of the Chairman, Dr. Glancy and Dr. Cumpston. The Council has appointed five sub-committees to advise it on specific areas of radiation usage. These committees and the number of meetings held during 1977 are the Medical Advisory Committee (3), Dental Advisory Committee (1), Industrial Radiation Committee (2), Non-Ionising Radiation Committee (4) and the Chiropractic Examining Panel (7).

During 1977, the Council and its committees prepared new regulations covering the use of X-rays, radioactive substances and microwave ovens and these were submitted to the Crown Law Department for formal drafting. This is expected to be completed and the regulations gazetted during 1978. Until this time, the previous regulations under the Radioactive Substances Act continue in force and the previous licencing and registration system remains unchanged. The Radiation Safety Act permits regulations to be made to control the use of "electronic products" which emit radiations, not controlled by the previous legislation. These are the non-ionising radiations which include electromagnetic, particulate, sonic, infrasonic or ultrasonic radiation. This will enable microwave and other radio-frequency generating apparatus, lasers, sources of ultraviolet light etc. to be prescribed so that they come within the provisions of the the Act. The new act will result in some changes in the present system of licencing and registration. Except where exemptions have been granted, irradiating apparatus, prescribed electronic products, and premises where these two categories or radioactive substances are used must be registered and the persons using the three categories must hold a licence.

Table I shows the number of licences and registrations in effect at 31/12/77. Table II shows the number of new licences approved during 1977.

TABLE I

LICENCES AND REGISTRATIONS

Licences Current at 31 December 1977	Radioactive Substance	X-Ray
Medical and Dental	17	153
Non-Medical	268	138
Total	285	291

Registrations Current at 31 December 1977	Radioactive Substances	X-Ray
Medical	Nil	25
Dental	Nil	272
Total	Nil	297

A single licence can represent multiple uses of radioactive substances and X-Ray equipment, e.g. some licencees have in excess of 20 X-Ray machines at one or more separate locations.

TABLE II

NEW LICENCES APPROVED DURING 1977

Licences	Radioactive Substances	X-Ray
Medical and Dental	1	30
Non-Medical	44	21
Total	45	51

FILM BADGE RADIATION MONITORING SERVICE

To determine the effectiveness of radiation protection measures, it is necessary to provide a means of detecting exposure to radiation of persons who are occupationally working with radiation. The Laboratory provides a film badge radiation monitoring service which is used by persons working with X-Rays and radioactive substances. The number of persons monitored rose by 11 per cent during 1977 to 2 661. The number of individual films processed during the year rose by six per cent to 22 032. Table III shows the number of persons using film badges in each employment group.

TABLE III

NUMBER OF PERSONS USING FILM BADGE MONITORING IN 1977 IN EMPLOYER GROUPS

Medical, Hospitals	616
Medical, General Practitioners	80
Medical, Radiologists and other	179
Chiropractors	34
Dentists	1 003
Non-Medical	749
Total	2 661

Details of personal radiation exposure as recorded by film badges are kept on microfilm at the State X-Ray Laboratory. Dose information is readily accessible if required. The microfilm form of storage facilitates the records being retained in perpetuity.

Since the film badge service was introduced almost 20 years ago, there have been very great improvements in radiation protection, and the average dose recorded by film badges is now very low. In an endeavour to reduce the workload on the film badge service, the period on monitoring, i.e. the length of time for which an individual film badge is worn, has gradually been extended and for most categories of radiation workers it is now one month. In the dental use of X-Rays, few significant doses are received by the dentist or his staff, and two years ago the period of monitoring was increased to three months. In 1978, a further change is to be introduced in selected practices whereby individual film badges will be replaced by a single area monitoring badge.

DIAGNOSTIC RADIOGRAPHY

Medical radiography is the greatest source of man-made radiation exposure of the population and in consequence, detailed attention is given to measures to minimise this source of exposure. Every new medical X-Ray unit is inspected for compliance of the equipment with the recommendations of the International Commission on Radiological Protection. Particular emphasis is placed on those items which have a direct bearing on the dose delivered to the patient. Although the I.C.R.P. recommendations were first issued some years ago, equipment from some manufacturers is still found to deliver unnecessarily high doses to the patients and remedial action must be taken.

NON-IONISING RADIATION

Under the Radiation Safety Act, "electronic products" which can produce non-ionising radiation may be prescribed by regulation so that they come within the authority of the Act. Regulations are being drafted to prescribe microwave ovens and lasers. Products which emit ultraviolet light are being investigated by a sub-committee of the Radiological Council's Industrial Radiation Committee.

The Division is gradually equipping for the surveillance of a major part of the non-ionising radiation spectrum. As this encompasses a wide variety of radiations, a diversity of measuring equipment is necessary. Present equipment includes instruments for the measurement of visible and ultraviolet light, and microwave radiation.

FIELD WORK, X-RAYS AND RADIOACTIVE SUBSTANCES

Regular visits to the premises of radiation users by the Laboratory's Physicists and Radiation Officers serve a valuable purpose in ensuring that X-Rays and radioactive substances are used effectively and safely. At initial visits, users are advised on radiation protection requirements and existing establishments are re-visited from time to time. These visits serve the purpose of assisting to maintain a high level of radiation safety and, where appropriate, the Laboratory's Radiation Officers assist those concerned to make more effective use of radiation by advising on areas within their competence, such as medical and veterinary radiography.

EDUCATION

Education of users of radiation both during field visits and formal courses is absorbing an increasing proportion of the time of the Division's staff. However, the time is well spent, resulting in greatly improved radiation safety in industry, medicine, dentistry and veterinary science. The following courses were given in 1977.

Basic Radiography for Country Hospitals (4 one-week courses; 42 students)

Basic Radiography for staff of the Australian Inland Mission and General Practices (8 students in special one day courses)

Radiation Safety in the Use of Radiation Gauges in Industry (3 three-day courses, 42 students)

Veterinary Radiography (3 lectures; part of course for veterinary nurses)

In addition, lectures on radiation safety and related topics are given to a variety of groups:

Topic	Organisation/Group
Dental Radiography Safety	Dental Health Service
New Radiation Safety Legislation	W.A.I.T. Physics Seminar
Radiation Safety	Science Teachers Association
Safe Transport of Radioactive Materials	Fire Officers, Perth Airport
Radiation Safety in Nuclear Medicine	Nuclear Medicine Registrar
Radiation in Industry	Industrial Foundation for Accident Prevention
Veterinary Radiography	Australian Veterinary Association
Microwave Oven Safety	Various Groups

The following papers were presented to meetings of professional organisations:

"Radiopharmaceutical Laboratory Design", L. M. Davies, Australian Radiation Protection Society Conference.

"Code of Practice for Radioactive Waste Disposal in W.A." L. M. Davies, Australian Radiation Protection Society Conference.

"Disposal of Aqueous Radioactive Wastes", L. M. Davies, W.A. Chapter, Institute of Plumbing.

"Radioactive Waste Disposal", L. M. Davies, Australian Institute of Health Surveyors, 4th National Conference.

"Radioisotope Laboratory Codes and Fume Cupboards", L. M. Davies, Annual Conference of the Institute of Hospital Engineers.

"Review of Laboratory Standards for Hospital Preparation of Pharmaceuticals", L. M. Davies, A. & N.Z. Society of Nuclear Medicine.

"Performance of Image Intensifiers", B. M. Hartley and B. E. King, Australian Radiation Protection Society Conference.

"S.I. Units for Biological Measurements" B. M. Hartley, Australian Radiation Protection Society Conference.

RADIATION MONITORING AND COUNTING EQUIPMENT, RADIATION STANDARDS

Equipment for the measurement of ionising radiation includes alpha, beta, gamma and X-Ray monitoring instruments. X and gamma ray instruments cover the range from television receivers (low energy X-Rays) to cobalt-60 and radium (high energy gamma rays). Low background counting assemblies permit the measurement and analysis, and where relevant, identification of samples of radioactive materials.

A sub-standard X-Ray dosemeter calibrated against the Australian primary standard is used for calibration of monitoring instruments and of therapy X-Ray apparatus. A range of standard radioactive sources is also used for calibration of instruments. X and gamma ray monitoring instruments used in industry, medicine and research are now called in for re-calibration at regular intervals. Thirty-three monitoring instruments were calibrated during the year.

TECHNICAL ADVICE AND RADIATION PROTECTION PLANNING

Many enquiries are received from the public on questions of radiation safety, particularly when a potential radiation hazard is referred to by the media. Technical advice on radiation protection and radiation health matters is given to applicants for licences and to licencees. The division's personnel advise on safety requirements for most new or altered radiation facilities in the State.

MINING AND MILLING OF RADIOACTIVE ORES

For many years the Division has kept under surveillance the production, storage and transport of monazite, a radioactive component of mineral sands which are mined and processed at a number of locations within the State. With increasing exploration for uranium and at least one proposal to mine and process uranium ore awaiting the approval of the Commonwealth Government, the Division has been closely studying radiation protection measures in the mining and milling area. Discussions have been held with officers of the Mines Department concerning the implementation of the Commonwealth Government's Code of Practice for Radiation Protection in the Mining and Milling of Radioactive Ore. Equipment is being assembled for the measurement of radon gas and its daughter products.

QUEEN ELIZABETH II MEDICAL CENTRE—RADIATION PROTECTION OFFICE

The Division provides the staff and facilities for the Radiation Protection Office of the Queen Elizabeth II Medical Centre, which incorporates the Sir Charles Gairdner Hospital, the State Health Laboratory Services, the Medical School of the University of W.A. and the State X-Ray Laboratory. The jurisdiction of the section was extended during 1977 by arrangement with the University to the main campus. The University assists with the funding of the office. An assistant to the Radiation Protection Officer was appointed in August, 1977.

MEMBERSHIP OF COMMITTEES

The Physicist in Charge is Secretary of the Radiological Council and a member of the Dental Advisory Committee. B. M. Hartley is Secretary of the Medical Advisory Committee, the Industrial Radiation Committee and the Non-Ionising Radiation Committee. L. M. Davies is a member of the Chiropractic Examining Committee.

The Physicist in Charge is a member of the N.H. and M.R.C.'s Radiation Health (standing) Committee. L. M. Davies is a member of the Radiation Health Committee's working groups on the Design of Radioisotope Laboratories and on a Code of Practice for Veterinary Use of X-Rays. Mr. Davies is Executive Officer of the Queen Elizabeth II Medical Centre Site Radiation Committee; he is W.A. representative on the Committee of the Australian and New Zealand Society of Nuclear Medicine and a member of the committee of the Australian Radiation Protection Society.

B. M. Hartley is treasurer of the W.A. Branch of the Australian Institute of Physics.

Appendix XII

Library and Technical Information Service

B. Proud, B.Sc.Agr. (Sydney) Dip. Lib.
Librarian and
J. Davis, B.A., M.S.L.S.
Technical Information Officer

LIBRARY SECTION

Once again the library has expanded its services in 1977. A new branch was opened in May at Dental Health Services. It commenced operation in temporary accommodation, but this situation should be rectified in 1978. This branch is providing library service for the professional dental staff of the department throughout the state, for school dental therapists and the students at the Dental Therapy Schools at Como and Warwick.

The volume of work handled by the main library has shown a considerable increase this year. The large increase in external borrowings reflects the increase in literature searches conducted. We have commenced subscriptions to 130 new journals and have taken out many multi-copy subscriptions to journals in high demand in order to reduce the length of circulation lists.

The number of books catalogued has also increased dramatically compared to 1976.

The branches at Community and Child Health Services and State Health Laboratory Service have served their clients well. The C.C.H.S. library moved into larger accommodation in September which has greatly improved both the morale of the staff and the reading area available to library users.

Further attempts to improve library services to country personnel have been made this year. I have been to Carnarvon twice to advise in the establishment of a library to serve the Community Health Services and Hospital staff. I have also travelled to other centres as far north as Derby to make personal contact with hospital and Community and Child Health Services staff. The feedback obtained from these visits have been very encouraging.

An event of great sadness occurred in October. Miss Wendy Rogers, our first Dental Health Services Librarian, was killed in a traffic accident while returning from holidays. She is remembered with deep affection by all who knew her.

TABLE 1
NEW BOOKS CATALOGUED IN 1977

Public Health Department	705
Community and Child Health Services	302
State Health Laboratory Service	156
State X-Ray Laboratory	55
Dental Health Service	131
Occupational Health	50
Health Computing Service	8
Bussleton Community Health Centre	4
Karratha Community Health Centre	2
Hospitals	403
Total	1 816

Previous totals were: 1973, 1 061: 1974, 1 244: 1975, 1 717: 1976, 916

TABLE 2
INTERSTATE AND OVERSEAS LOANS

	1973	1974	1975	1976	1977
Australia	102	181	287	165	155
Overseas	14	15	10	14	4
Total	116	196	297	179	159

TABLE 3

INTRASTATE LOANS

	1973	1974	1975	1976	1977
Courier Service	....	....	758	608	758
Others	....	....	146	192	370
Total	806	876	904	800	1 128

TABLE 4

EXTERNAL BORROWINGS

	1973	1974	1975	1976	1977
Interstate/Overseas	222	372	462	628	696
Intrastate	497	751	457	Courier 713	1 185
			155	Other 280	355
Total	719	1 123	1 074	1 621	2 236

TABLE 5

STAFFING

	Level	PHD	CCHS	SHLS	DHS	Total
Librarian	6	1	....	....	....	1
Librarian	4	1	1	1	....	3
Librarian	3	....	....	....	1	1
Library Assistant	1	2	....	....	....	2
Typist	CV	1	....	....	....	1
Clerical Assistant	CVI	1	1	....	....	2
Total	....	6	2	1	1	10

JOURNALS

Additional new journals: 130.
Average monthly circulated: 1 628.
Annual Reports received: 128.

PHOTOCOPIES

Monthly average of photocopies supplied: 1 180:

TECHNICAL INFORMATION SERVICE

Trips to country hospitals and health facilities during 1977 led to a 33·3 per cent increase in patron current awareness profiles. Finding out what people outside the metropolitan area really want and need has made a great difference to the output of the Technical Information Service.

One by-product of these trips and conversations during the Nursing Administrators and Hospital Administrators Conference has been the joint development of a monthly nursing newsletter sent to all hospitals and nursing posts.

The Technical Information Service continues to produce "TECHNICAL CIRCULAR" in conjunction with the Health Surveyors. Introduction of photo offset services by the Government Printer has led to better reproduction of graphics, as well as faster printing.

The weekly public newsletter "CAPSULES" now has State-wide circulation.

Eight new continuing bibliographies joined the existing fifty-six maintained by the Technical Information Officer. Topics added in 1977 ranged from Body Scanners to Migrant Health.

Six more local health-related agencies, without information facilities, requested our service in 1977 (e.g. Asthma Foundation).

Mrs. Davis, Technical Information Officer, spoke about the Technical Information Service and selective dissemination of information at a Special Libraries seminar in Perth during October 1977.

My thanks again to the Library section for its splendid support services.

Appendix XIII

Health Surveying Branch

J. F. Slattery, M.R.S.H., F.A.I.H.S.
Chief Health Surveyor

1. INTRODUCTION

During the year the arrangements commenced the previous year, to re-organise the Branch into five sections, each with clearly identifiable areas of Environmental Health activity, were introduced. Each section is under the control of a Senior Officer with staff supervisory responsibilities, and to ensure that equal experience is maintained with all activities, staff are rotated through the various sections.

Set out hereunder is a summary of the activities of the Branch conducted by those sections for the year 1977.

2. TRAINEE HEALTH SURVEYORS

A staff of four Trainees was maintained during the year, and all successfully completed their end of the year examinations.

There is continued interest in these positions by young men from both within and outside the Public Service, who are interested in a career in Environmental Health, and suitable applicants for consequential vacancies have not ever presented a problem.

3. HEALTH LIAISON GROUPS

Due to changes in appointments and other factors, some groups did not meet as frequently as in previous years. However, meetings of all groups were held during the year, with a Departmental Officer in attendance on each occasion and a variety of subjects discussed and aspects of Departmental policy explained.

4. REGIONAL HEALTH GROUPS

In previous reports reference was made to changing circumstances which were having impact upon the financial and administrative arrangements of Regional Health Groups.

Resulting from Branch investigations, the situation of all Regional Groups in the State was reviewed again and where practical a re-arrangement of grouping was made in order to permit affected Local Authorities making a more equitable financial contribution to its particular group.

5. HEALTH SUPERVISION, NORTH WEST AND EASTERN GOLDFIELDS AREAS

A review of the environmental health services in the West and East Kimberley Regions, which were constituted in 1976, has shown that the division of Kimberley Local Authorities into two regions is justified.

If the development rate continues in these regions, there could be a need for an increased service during 1979.

Final arrangements were made during the year for the employment of a full time officer in the East Pilbara region. The Department's financial contribution to the Local Authority for this scheme is a reducible annual scale.

The regular supervisory visits to the Shires of Menzies, Leonora, Laverton and Wiluna were continued during 1977, as it is beyond the financial ability of these Local Authorities to employ an Environmental Health Officer.

6. MINING LEASE TOWNS

Branch Officers were involved in the planning and development of the townships of Leinster and Telfer.

This has involved regular visits by officers to advise and supervise construction of housing, shopping and public buildings, staff accommodation and messing facilities, water, sewerage and drainage works.

Where a mining township water supply is not subject to the supervision of the Public Works Department, the Branch has continued a regular monitoring service in respect to water quality. Where quality problems have occurred, remedial action has been taken.

7. MEAT INDUSTRY

Continuation of the drought in Western Australia created abnormal conditions throughout the Meat Industry. It became increasingly difficult to find suitable quality meats for the local market, resulting in the importation of large quantities of meat from Queensland, New South Wales and Victoria and the re-introduction onto the local market of Buffalo Meat from the Northern Territory. A close surveillance of all meat from the other States has been maintained to ensure that "dumping" of unsuitable meat did not occur.

With the depressed state of the meat market and the costs involved in killing and handling charges, an increase in illegal slaughter was noted during 1977. Departmental Officers have been involved in a number of metropolitan and near metropolitan areas in successfully locating offenders and subsequently instigating legal proceedings.

Liaison with the W.A. Meat Industry Authority continued throughout 1977 in connection with the approval of all meat works. A survey of the standards of all works was completed and schedule of works compiled for work to be carried out as a condition of approval. The Meat Industry Authority approval does not in any way interfere with the responsibilities of registration and control by Health Authorities.

8. MEAT WORKS

The number of meat works throughout the State has been reduced by one.

Number of Local Works	52	(53 in 1976)
Number of Export Works	14	
	66	

Of the 52 local meat works, three have ceased killing and will not re-open until they are brought up to the required standard.

The works closed are situated at:—

Boyup Brook
Port Hedland
Northampton

Enquiries have continued throughout 1977 for the construction of new meat works, but no new works were constructed during the year.

9. MEAT INSPECTION

Inspection of all animals slaughtered at metropolitan abattoirs for human consumption was conducted as in previous years, and efforts to obtain State-wide uniformity in inspection procedures were continued by periodic visits by Departmental Officers to country works.

The Meat Inspection Section had movement of eight officers during 1977.

Five officers resigned and took up duties with the Commonwealth Department of Primary Industry.

One officer resigned to enter private enterprise.

One officer reached retirement age, and one officer was transferred to the General Section of this Department.

The number of meat works in country areas without the services of a Meat Inspector has been reduced from 22 to 16. Although this number is considered high, the percentage of meat not receiving certification is very low.

The percentage of total animals slaughtered for the local trade, not subjected to meat inspection, is:—

Cattle	0·7%
Sheep	0·8%
Pigs	0·5%

10. ILLEGAL SLAUGHTER

Successful prosecutions for illegal slaughter in which Departmental Officers were involved and fines imposed were:—

Johnson—Cockburn	$70 fine and costs
Sertorio and Prezena—Mundaring	$90 fine and costs
Freitas—Armadale	$68 fine and costs
Algeri—Armadale	$55 fine and costs
Wesolowski—Mundaring	$592 fine and costs

Three cases in the country and one in the metropolitan area are pending.

11. MEAT TRANSPORT

A high standard is being maintained in vehicles used for the transport of meat and meat products.

Fifteen new vehicles were inspected and approved prior to licensing by the Transport Commission. Liaison with the Transport Commission resulted in a number of vehicles having their licence revoked until necessary upgrading was carried out to comply with Departmental requirements.

Zoonosis

Forty-five specimens from bovine animals submitted for identification were diagnosed as viable or suspected as being Cysticercus Bovis.

Tail tags indicated the areas of origin.

Muchea	5	Mundijong	1
Gin Gin	5	Dudinin	1
Dumbleyung	3	Kukerin	1
Chittering	3	Toodyay	1
Irwin	3	Moora	1
Harvey	2	Boyup Brook	1
Busselton	2	Calingiri	1
Corrigin	2	Serpentine	1
Kojonup	2	Not Traceable	7
Geraldton	1		—
Port Hedland	1		45
Kulin	1		—

Hydatid Disease

Animals found to be affected with Hydatid cysts during routine inspection at metropolitan abattoirs were from the following areas:—

Mount Barker
Mullewa
Dardanup
Narrogin
Harvey
Waroona
Perenjori
Boyanup
Gingin
Esperance
Wongan Hills

The owners of the properties were notified of the condition and advised to have their dogs attended to.

12. FASCIOLA HEPATICA

A snail associated with the life cycle of Fasciola Hepatica (Liver Fluke) has been found in a number of centres throughout Western Australia.

There has been a number of cases of liver fluke diagnosed in animals during 1977, but all have been traced to known liver fluke areas in the Eastern States—particularly South Australia.

13. SALMONELLOSIS

As a result of an outbreak of Salmonellosis in the metropolitan area during 1977, all the meat inspection staff of the Department were tested as possible carriers. All officers proved negative.

14. S.A.A.

An Australian Code for the Safety in the Meat Industry was published in 1977 and is available from the Standards Association of Australia. Further codes concerning equipment within the meat industry are under consideration and the final draft for standards concerning knives and their safe use is at present being distributed to interested bodies for comment.

15. MEAT SAMPLING

An increased programme of sampling of meat and meat products was undertaken during 1977. Carcase and cartoned meats from other States was responsible for a greater proportion of the samples of this type of meat.

Samples taken:—

Beef	42	Tripe	44
Buffalo	68	Beef Offal	2
Pork	95	Minced Kangaroo	1
Mutton (including Goat)	9	Smallgoods	1
Pork Offal	34	Meat Meal	8
Minced Meat	2		
Sausages	19	Total	325

16. ENTERIC DISEASE SURVEILLANCE

The monitoring of effluents from all metropolitan abattoirs as a part of the enteric disease surveillance programme continued during 1977.

This system was also used on a more intense scale at Robbs Jetty to assist the W.A. Meat Commission in their endeavour to produce a better effluent which is discharged into Cockburn Sound.

One hundred and twenty-two samples of effluent from metropolitan abattoirs were submitted to the Bacteriological Laboratory.

17. ANIMAL DISEASE INVESTIGATIONS

Co-operation with Department of Agriculture Officers in collecting and correlating information and specimens for various investigations into animal disease and conditions continued during 1977. T.B. Polyarthritis, Ovis, Hydatids and Brucellosis were among conditions under surveillance.

18. FISHING INDUSTRY

Abrolhos Islands

Investigations made of all inhabited islands in the group confirmed that there has been a responsible improvement in basic sanitation requirements. Waste disposal measures were found to be adequate and there has been an increase in the use of chemical toilet facilities in lieu of the previously used unsatisfactory facilities.

Overcrowding of two of the major islands has now been limited by the Department of Fisheries and Wildlife.

A microbiological survey of indigenous reptiles and wallabies showed that there was no indication of animals being infected with human sero-types of Salmonella.

19. FISH PROCESSING

During 1977 there was a marked increase in the demand for information regarding structural standards for the establishment of fish processing establishments.

Two new wet fish processing premises were brought into operation and this includes the development of a large processing plant in Albany. The situation regarding the provision of a regular fish inspection service at these works is being examined.

20. FISH HANDLING

A new concept in the marketing of hermetically packaged chilled fresh fish was introduced during the year by a large retail chain store. The market for this type of commodity proved popular.

Further research was conducted conjointly with the Fishing Industry into the provision of acceptable containers for the transport of wet fish.

21. FOOD AND LIQUOR

Activities of the Branch relating to food continued to expand throughout the year. This being a direct consequence of the food industry's natural expansion and increasing sophistication.

The ever increasing range of foodstuffs now being marketed is also a contributing factor to this issue.

As a consequence there has been a notable impact on the normal activities which include the examination of premises and personnel, manufacturing processes, storage, transport, distribution and routine sampling procedures of food stuffs for compliance with prescribed standards.

During the period under review, three particular events occurred which serve to illustrate the need for constant surveillance of food products.

The first event involved the need to condemn and destroy several thousand dollars worth of confectionery which had inadvertently been contaminated by an excess of Dichlorvos, a chemical used for fumigating a warehouse used for storage of the confectionery.

The second incident relates to the withdrawal from sale of two brands of infant formula powder produced in the Eastern States which were found to be contaminated with Salmonellae Bredeny organisms.

On the receipt of advice from the Australian Department of Health, of the possibility of the presence of this organism, an extensive sampling and recall programme was instituted by the Department.

Sampling of locally produced dried milk products is a normal routine matter and bacteriological records show that satisfactory standards are maintained.

The third major incident was of a similar nature in that it involved Salmonellae organism contamination of a sodium caseninate product used in dietary food biscuits and invalid food supplements.

All affected products were withdrawn from local markets.

As in previous years, special survey sampling procedures involving fish for mercury content; market basket sampling for pesticide and metal residue and State-wide investigations regarding bacteriological and chemical food spoilage aspects were continued.

There was a marked increase in the number of food complaints (441) received and examined during the period.

In latter years there has been an increasing number of complaints made by the public and this probably reflects growing awareness of the need for quality control.

The complaints made were relative to the following:—

Asparagus	2	Herbs and Spices	1
Baby Food	7	Honey	1
Beer	3	Jam	4
Biscuits	7	Margarine	2
Bread	63	Meat and Meat Products	37
Cakes, Pastries, Puddings (Including Mixes and Icings)	21	Milk and Milk Products	44
Cereals	17	Nuts	2
Cigarettes	1	Pickles	3
Cheese and Cheese Products	4	Pies, Pasties and Sausage Rolls	13
Coffee	2	Rice	2
Confectionery	20	Salt	1
Cool Drinks	8	Sandwiches and Rolls	5
Curry	1	Shellfish	7
Fish	8	Soup	2
Flour Products	2	Spirits	2
Food Handling	16	Spreads	4
Food Poisoning	55	Stove Cleaners	1
Food Premises	21	Take Away Foods	9
Fruit (Canned)	6	Toys	1
Fruit (Dried)	3	Vegetables	14
Fruit (Fresh)	4	Water	6
Fruit Juice	8	Wine	1
		Total	441

22. FOOD SAMPLING

Routine food sampling programmes were maintained, the nature of the sampling examinations required and the variety of commodities sampled is listed hereunder.

The necessary remedial action was taken in the many instances where samples indicated that products did not comply with Legislative requirements.

Bacteriological Samples

Biscuits	8	Fruit Drinks	3
Cakes and Pastries	15	Imitation Cream	16
Casserole	5	Infant Food Formula	65
Cereal	1	Meat and Meat Products	201
Chicken	15	Milk and Milk Products	68
Cocoa Extract	1	Peanut Paste	1
Confectionery	11	Pies	10
Cool Drinks	29	Sauce	1
Curry	2	Shellfish	40
Eggs	1	Soup Mix	2
Food Additives	11	Tinned Foods	3
Fish	8	Vegetables	2
Flour	2	Water	9
Frozen Dinners	6		
Fruit	3	Total	539

Mycology Samples

Bread	2
Jam	2
Meat	1
Total	5

Chemical Samples

Beer	10	Meat and Meat Products	79
Bread	10	Milk and Milk Products	30
Breast Milk	12	Pies	3
Cereal	1	Salt	3
Chicken	9	Sausages	18
Chestnuts	1	Shellfish	6
Coconut	3	Soap Powders	3
Coffee	2	Soup Mix	2
Confectionery	32	Spreads and Dressings	6
Cool Drinks	28	Tins	2
Dripping	5	Tomato Sauce	7
Fish	189	Tripe	47
Flour	5	Vegetable	31
Fruit	26	Water	8
Fruit Juice	10	Miscellaneous	3
Herbs and Spices	3		
Honey and Jams	5	Total	599

23. IMPORTED FOODS

Examination and sampling of imported foods at each of the main importing centres, Fremantle Wharf, Kewdale Marshalling Yards and the Perth Airport was maintained during the year.

While the volume and nature of foods examined continues to increase, frozen fish remains the predominate product imported.

During 1977—3 846 136 kilograms of fish were examined with fees raised for inspection amounting to $6 459.00. These figures are slightly in excess of the previous year.

There was a further increase during the period of the use of containerisation of foods. This method of handling is having an impact on the inspection procedures.

An increase in livestock exports has necessitated negotiations with Port Authorities regarding future cleansing and disinfection of wharfside areas.

A satisfactory microbiological standard for imported prawns has been under examination for some time and a draft regulation was prepared and approved by the Food and Drug Advisory Committee late in 1977. It is expected that the draft will become effective legislation in 1978.

A total of 553 samples of imported foods were taken and submitted for chemical and bacteriological examination where appropriate.

Details of imported foodstuffs sampled and condemned are as follows:—

Samples Ex Fremantle Wharf—1977

Bacteriological Analysis		*Chemical Analysis*	
	Number		Number
Coconut	7	Coconut	44
Fish	2	Fish	323
Meat	4	Plastic Bags	1
Shellfish	98	Shellfish	65
Water	3	Water	1
Miscellaneous	1	Miscellaneous	3
Total	115	Total	437

Food Condemned Ex Wharf

Food—		*Food*—continued	
Honey	20·5 kgs	Wine	1 kg
Black Cherries	11·9 kgs	Tea	153 kgs
Olive Oil	30 Litres	Champignons	2·090 kgs

Food Condemned Ex Wharf—continued

Food—continued

Champignons	6	kgs
Olive Oil	3	Litres
Sliced Mushrooms	5·7	Litres
Champignons	1·485	kgs
Baby Carrots	7	kgs
Dried Apricots	4	kgs
Asparagus Spears	6·75	kgs
Dried Apricots	14	kgs
Asparagus	2	kgs
Mushrooms	4·37	kgs
Mushrooms	14·5	kgs
Rice	1	kgs
Syrup	1·5	kgs
Coconut	1 800	kgs
Grapefruit	10·7	kgs
Apricots	25	kgs
Red Currants	4	kgs
Toffee	2·04	kgs
Asparagus Spears	45	kgs
Lentil Beans	38	kgs
Pickles	4·32	kgs
Pickles	1·35	kgs
Water Chestnuts	99	Cartons
Lima Beans	135	kgs
Broceci Spears	4	kgs
Grapefruit Segments	4	Cartons
Mixed Pickles	2·5	kgs
Cob Corn	3	Cartons
Noodles	1	Packet
Cooking Sauce	1	Carton
Pickled Scalion	1	Carton
Mushrooms	100	kgs
Cob Corn	1	Carton
Escargots	3	kgs
Mushrooms	33	kgs

Fish Frozen—

Crabmeat	5	kgs
Hake	87·5	kgs
Snapper	12	kgs
Hake	11	kgs
Smoked Cod	5	kgs
Smoked Cod	5	kgs
Fish Fingers	5·25	kgs
Hake Fillets	59	kgs

Fish Frozen—continued

Fish Fingers	9 500	kgs
Hake Fillets	2·5	kgs
Hake Fillets	9·0	kgs
Hake Fillets	50	kgs
King Crab	2·5	kgs
Frozen Fish	315	Cartons

Canned—

Tuna	800	gms
Pink Salmon	1·76	kgs
Red Salmon	12·320	kgs
Salmon	7·9	kgs
Crab Meat	4·65	kgs
Scotch Herring	1	kg
Pink Salmon	3·54	kgs
Pink Salmon	1·32	kgs
Baby Clams	32	Cartons
Mussels	11	Cartons
Smoked Baby Clams	4	Cartons
Anchovies in Oil	2	Cartons
Anchovies	2	Cartons
Salmon	10	kgs
Anchovies	10	kgs

Frozen—

Flounder Fillets	500	Cartons
Smoked Salmon	50	Cartons
Whole Plaice	122	Cartons
Smoked Salmon Sides	15	Cartons
Smoked Salmon Sides	20	Cartons
Whiting Fillets	2·53	kgs
Hake Fillet	25	kgs
Hake Fillet	75	kgs
Squid	10	kgs
Hake Fillet	25	kgs
Hake Fillet	25	kgs
Kingclip	40	kgs
Dover Soles	25	Cartons
Whole Plaice	158	Cartons
Shrimps	1	Carton
Smoked Cod Fillets	1	Carton
Hake Fillets	1	Carton
Hake Fillet	4·75	Cartons
Herring	20	kgs
Hake Fillet	5·4	Cartons
Crabmeat	5	kgs
Shrimps	1	Packet
Prawns	4	Packets
Hake Fillets	7	kgs
Hake Fillets	12·5	kgs
Cod Fillets	6·81	kgs

24. LIQUOR

A total of 785 visits were made to licensed premises during the year. This number being less than that achieved during 1976 due mainly to staff commitments.

In addition to licensed premises, inspection and sampling procedures were given a full cover for special functions such as the Royal Show, Oktoberfest, Wine Festival, etc.

Details of liquor sampling results are as follows:—

Liquor Inspection

	Current Licences		Inspections	
	Metro	Country	Metro	Country
Hotels	130	225	152	166
Limited Hotels	16	7	12	12
Taverns	80	73	97	40
Restaurants	93	31	64	16
Winehouses	11	....	12	....
Clubs	142	189	139	75
Spirit Merchants	48	10	....	....
Licensed Stores	172	111	....	....
Cabarets	22	3	....	....
Total	714	649	476	309

Routine Regular Inspection

Australian Winehouse	9	5
Catering Permit	....	....
Theatre	4	....
Function	....	....
Packet	11	....
Railway Refreshment	....	....
Canteen	1	9
Clubs—Unlicensed	56	98
Brewers	3	1

Inspections of licensed premises for 1977 were below those of the previous two years, mainly due to staff shortage.

Liquor Testing

Summary of Spirits Tested—1977

Totals

Whisky	I	1674	Vodka and Ouzo	I	56
	A	298		A	506
Brandy	I	75	S. Spirits	I	127
	A	674		A	56
Rum	I	547			
	A	465	Grand Total		5068
Gin	I	283			
	A	307			

*I—Imported A—Australia

Following samples taken for analysis.

Rum	5	Cooking Wine	....
Whisky	11	Medicated Wine	....
Bourbon	2	Beer	7
Brandy	3	Tequila	2
Cognac	....	Gin	1
Vodka	....		
Sherry	....	Total	31

Where necessary, legal action is taken for below strength spirits.

Attention is also given during inspections to aspects of bar and coolroom hygiene and for provision of dye to drip trays. It is expected that legislation will be enacted shortly for it to be illegal to decant any beer back into the original container.

25. ENTERIC DISEASES SURVEILLANCE

Throughout the year routine and special investigations were made where necessary into sporadic outbreaks of enteric diseases such as hepatitis, dysentary and salmonella infections which occurred in various parts of the State.

The most serious of Salmonellosis occurred during the months of February to August when 162 confirmed cases of Salmonella Chester were notified in the metropolitan area—mainly in the northern suburbs.

This outbreak involved a full scale Departmental investigation, in an endeavour to isolate the probable source, however in spite of the concerted effort, no firm conclusion could be established as to the cause of outbreak.

As in past years, further investigations were made for the Commonwealth Department of Health regarding Typhoid case contacts arriving from overseas.

26. PUBLIC BUILDINGS

Work in this area continued through 1977 with approximately three hundred formal approvals totalling thirty million dollars. A similar number of informal investigations relating to preliminary sketch plans of proposals and examination of existing premises, regarding suitability for change of occupancy to public building use, has also been an important activity.

A considerable number of Architects, Designers and business people seek advice and submit sketches in the preliminary stages to ensure their proposals will be acceptable to the Department. This is encouraged by the staff, as it has been found over the years that more satisfactory results are obtained if proposals are discussed in the early stages, which saves time in the long term.

Several proposals to convert existing buildings to public buildings have been refused. Reasons for this include defects in aspects such as fire isolation, escape stairs, toilet facilities, electrical installations and the general difficulty of upgrading the premises.

Circuses, Royal Show, Oktoberfest, Wine Festival and temporary seating for sporting and civic events were closely scrutinised in the interest of safety.

The electrical installations associated with the above events are often of considerable concern and the possibility of arranging for permanent switchboards and power outlets for travelling circuses is being investigated.

Existing premises such as night-clubs, taverns, entertainment areas, cinemas have been kept under surveillance as time permitted and action taken as necessary to remedy defects.

Vigorous efforts have been made to ensure electrical safety in public buildings.

Cinemas

All city metropolitan theatres were inspected around June 1977. A further inspection is being carried out at the time of this report.

The majority of theatres are well maintained. Defects found in a small proportion of cinemas have now been remedied.

Public Halls

Eighty-six buildings inspected. Major buildings in the following shires were inspected during the year:—

Armadale-Kelmscott Shire
Canning Town Council
Nedlands City Council
Gosnells City Council
Perth City Council
South Perth City Council
Stirling City Council
Wanneroo Shire Council
Fremantle City Council
Bayswater Shire Council
Bassendean Town Council
East Fremantle Town Council

Faults reported to the authority concerned ranged from overloading of electric cable, broken fittings, open switchboards with exposed live terminals, to locked or obstructed escapes. Vandalism is still a problem at suburban halls where outside lights are broken. In some cases conduits and cables are pulled from their mountings and left in a dangerous condition. Earth conductors and connections are removed from water pipes, leaving the building without a protective earthing system.

The co-operation received from the local governing bodies in rectifying faults was excellent in most cases.

Night Clubs

Twenty-six were inspected.

Letters requesting repairs or alterations to electrical fixtures or wiring were sent to the management of nine clubs.

The condition of the electrical installation in night clubs has shown a marked improvement over the past four years. Three clubs have changed hands over the last year and have been upgraded. Generally club owners are more aware of electrical hazards, therefore electrical work is being carried out by qualified personnel.

Hotels

Fifty-one buildings inspected.

The entertainment areas in hotels are generally in a good condition. A lack of power outlets for games machines is a problem, resulting in flexible cords run through doorways and under tables. Fire isolated rooms built for switchboards are used for store rooms. As well as a fire hazard, equipment on the switchpanels would be inaccessible in an emergency.

Dance Halls

All major dance halls and halls used for classes were visited during the year and with few exceptions, conditions were satisfactory.

Public Swimming Pools

Swimming pools in the metropolitan area were surveyed for general sanitation and water quality. Tests indicated the presence of free residual chlorine in the water in most pools at time of inspection.

Bacteriological samples taken supported field test findings and were invariably negative in the presence of free residual chlorine.

The D.P.D. method of testing is now the recommended method and almost all pool managers have converted satisfactorily. Shires constantly request Departmental approval for persons employed as pool attendants. Generally the standard appears quite satisfactory.

There were four fires in public buildings during the year.

No one was injured and in the Harbour Theatre fire in Fremantle the spread was almost certainly contained by a fire door and wall which had been provided at Departmental request.

Officers from the section have once again provided lectures and talks to courses conducted by the:—

National Safety Council—Pool Manager Students.
Technical Education Division—Health Surveyor Students.
University of Western Australia—Architectural Students
W.A.I.T.—Environmental Health Students.
Teachers' Training College—Recreation Officer Students.
Nurses' Post Graduate Course in Administration.

Reports of tinea reputed to be associated with saunas were investigated during the year.

The survey failed to disclose evidence of any undue incidence of tinea, however, suitable precautions were recommended to the appropriate people.

27. CARAVAN PARKS AND CAMPING GROUNDS

There was a further increase in the numbers of established caravan parks in the State. All plans of new parks are examined by Departmental Officers to ensure that proper standards are attained.

At the request of the Inter-Departmental Working Party investigating current legislation, Departmental Officers conducted a State-wide survey and recorded comprehensive information regarding prevailing conditions in all parks.

This information has been collated and is incorporated in the first stage report of the Working Party, which will be completed and presented early in 1978.

28. LAND SUITABILITY

A total of 634 sub-divisional proposals were examined on behalf of the Town Planning Board. This number was made up as follows:—

Metropolitan Area	478
Country	120
Rural Holdings	36
	634

In addition, 178 appeals to the Hon. Minister for Town Planning were investigated for Public Health implications.

A number of special land suitability investigations were made for Local Authorities, Architects, Surveyors and Land Developers.

Altogether, technical appraisals and advice was given on 1 055 land development proposals.

Some problems have been experienced with the development of "Hobby Farms" in localities not serviced with a reticulated water supply, and where an on-site source of water is not available. This situation is compounded if the Local Authority has a general district legislative requirement for the provision of septic tank systems to service individual households.

These matters can be resolved if adequate water storage facilities are provided.

29. SEPTIC TANKS AND SEWERING SCHEMES

A total of 7 287 septic tank plans were examined and approved during the year. This total is comprised of 3 926 applications received for the installation of septic tanks in country areas and 3 361 for the metropolitan area.

The total represents the lowest number of applications received since 1956. This probably reflects a combination of the increasing use of deep sewerage systems for new housing developments and a decline in building construction during the period under review.

Since 1940, over 250 000 septic tank plans have been approved by the Department. In 1940, when 776 systems were approved, the number of applications has increased annually to a peak of 16 090 in 1968. From that year the number of plans examined has decreased to less than 10 000 per annum.

During the year a number of country Local Authorities received approval for the extension of existing sewerage systems, thus obviating a further need for new and existing septic tank systems.

In a number of country localities routine examinations of sewage treatment lagoon systems revealed that although most systems were functioning satisfactorily, there were in some instances a need for improvement in the standard of the effluent discharge.

These matters were attended to by the responsible authority.

30. FIBREGLASS SEPTIC TANKS

As there had been a number of reports regarding the quality of some tanks, an investigation was made into manufacturing processes.

Although generally satisfactory, more advanced technology and new methods of moulding resulted in drafting of proposed amendments to the legislation to meet those changes and cover some aspects of the industry that required improvement.

31. WET AREA FLOORS

Due to several complaints received from Local Authorities regarding unsuitable floors in some transportable homes, an industry that produced about 1 000 units per year, an investigation was made in conjunction with firms involved to standardise materials and fixing of wet area floors.

Draft legislation, which was circulated to all parties involved, is now being considered by Crown Law Officers.

32. COMMUNITY WASTES

In August 1976, State Cabinet approved the formation of two committees to advise the Department of Public Health on all aspects of Local Authority involvement in the collection and disposal of community wastes. The main committee is the Western Australian Waste Disposal Advisory Committee under the chairmanship of the Commissioner of Public Health and comprised of eight elected members of Local Government. This committee is supported by a Technical Committee of eight members' comprised of Departmental and Local Government Officers who had particular expertise in the area of community wastes.

The Secretariat for both Committees is provided by the Department of Public Health and since formation of the Committees, each has met on 12 occasions.

The Committees' activities have been directed to:—

1. Examination of the existing four zone groupings to determine whether some rearrangement was necessary through geographic, economic or other advantage. All Local Authorities were approached for their views on zone groupings and the responses indicated that some rearrangement was considered desirable for future planning in waste management. As a result, the composition of the zones was altered and five refuse disposal zones were formed. The Committee is also considering formation of the zones into Regional Councils for the purposes of Section 329 of the Local Government Act.
2. Examination of proposals for the treatment of solid wastes by pulverisation or baling. Several Local Authorities have submitted plans to the Committee, proposing supplementary methods to increase refuse density. These include a pulverisation plant, baling and transfer station.
3. The priority to the problem of disposing of liquid wastes. Currently the Committees are examining a proposal to establish a liquid waste treatment plant to treat both septic and industrial toxic liquid wastes.

33. ROYAL AGRICULTURAL SHOW

The supervisory role of environmental health aspects at the Show Grounds was continued for the 1977 Royal Show event. This involved negotiations during the months preceding the Show with regard to the standards of premises, particularly the food preparation buildings. Public building aspects in side shows of necessity require concentrated inspections immediately prior to the commencement of the function.

Departmental Officers are in attendance during the entire period of the function, in order to ensure that general hygiene standards are maintained.

During the past decade the standards of buildings and the general conduct of food handling premises has improved appreciably; this being largely through the co-operative efforts of the Royal Agricultural Society with Departmental Officers.

The provision by the Royal Agricultural Society of toilet facilities for handicapped people is to be commended.

34. PEST CONTROL

The Pest Control activities increased during the year under review, largely due to the increased number of insecticide treatments required by Government and Semi-Government buildings. The main problems experienced being infestation with cockroaches, spiders and mice.

Fly control measures also constitute a large part of the unit's activities, particularly during the active season of the bush fly.

Other activities include:—

(a) Testing of new formulations of pest control chemicals and rodent baits.

(b) Training of Local Authority and hospital employees in pest control procedures.

(c) Training of mature age fly control officers for employment by Local Authorities during the periods of fly eradication programmes.

Details of specific pest control treatments are as under:—

Summary for year ending 31st December, 1977.

Total number of fly control inspections	489
Total number of insecticide treatments	804
Total number of rodent inspection and bait placements	404

319—Cockroach
62—Termite
105—Red Back Spider
14—Mosquito
16—Honey Bee
31—Flea
53—Ant
46—Pigeon
11—Pigeon Mite
3—Drug Store Beetle
6—Weevil
4—Carpet Beetle
404—Rodent
2—Midge
7—Wasp
17—Cat
46—Silverfish
26—Fly
4—Bed Bug
1—Moth
1—Aphids
2—Brown Dog Tick
7—Cigarette Beetle
17—Possum
3—Cricket
1—Larvae

35. DETAILS OF OTHER ROUTINE AND SPECIAL INVESTIGATIONS CONDUCTED DURING THIS YEAR

1. Investigations of Statutory Appeals and complaints made to the Commissioner of Public Health.
   116 Appeals 472 Complaints
2. Regular supervisory visits to country Local Authorities.
3. Regular inspections of Perth Airport on behalf of the Department of Civil Aviation and all food handling premises under the control of State Government Authorities.
4. Regular surveys were commenced during the year in relation to traveller accommodation on the Eyre Highway.
5. Regular inspections made of facilities at Rottnest Island and National Parks.
6. Attendances of meetings and conferences on behalf of the Commissioner of Public Health, both locally and inter-State. Lecturing of Environmental Health Students and nurses and various formal and informal groups.
7. Special investigations were made in relation to:—
   (a) Plastic effluent drainage disposal units in regard to the deterioration caused by exposure to sunlight.
   (b) Builders' toilet facilities.
   (c) Drainage and waste disposal measures for dog kennels.
   (d) Re-use of sewage effluent for sports oval reticulation.
   (e) Methods for re-use of domestic waste water on gardens. As a general principle all proposals were not approved.

8. Continuing activities commenced in previous years.
    (a) Regular sampling of community water supplies not under direct control of the Metropolitan Water Board and Country Water Supply.
    (b) Special survey of Public Health Standards of all schools throughout the State. Two hundred and twenty-four schools were examined.
    (c) Regular visits to manufacturers of septic tanks and drain components.
    (d) The spring/autumn annual fly control programme, involving co-ordination of Local Authority activities and training of fly control officers.
    (Details of current programme attached in Appendices)

9. Routine sampling activities included:—

Routine Samples	
Ocean Samples (Coliforms)	1 214
Lake Samples (Coliforms—Salmonella)	144
River Samples (Coliforms—Salmonella)	540
Miscellaneous	
Abattoir Effluent	90
Domestic Water Supplies	32
Public Swimming Pools	2
	124
Grand Total	2 022

10. **Appreciation**

My appreciation is again expressed to a loyal and hard working staff who were responsible for the above activities.

MEAT INSPECTION FOR THE YEAR ENDED 31st DECEMBER, 1977

Abattoir and Type of Stock Slaughtered	Stock Slaught- ered	Carcases Condemned										Part Carcases Condemned						Organs Condemned						
		Tuberculosis	Actinomycosis	Emaciation	Piroplasmosis	Pleuro-pneumonia	Caseous Lymph-Adenitis	Para-typhoid	Traumatic and Septic	Other Abnormalities	Total	Actinomycosis	Caseous Lymph-Adenitis	Tuberculosis	Arthritis	Other Abnormalities	Total	Actinomycosis	Echinococcus Granulosis	C. Ovis	Hydatids	Tuberculosis	Other Abnormalities	Tota
MIDLAND—																								
Cattle and Calves	39 511	32	8	....	....	....	....	....	125	124	289	189	....	....	1	81	271	7 820	3	....	....	....	20 425	28 248
Sheep and Lambs	121 067	....	....	....	....	....	433	90	....	27 356	27 879	....	....	....	....	....	....	....	....	....	....	....	151 352	151 352
Pigs	111 963	4	....	....	....	....	....	....	173	297	474	3	....	6	614	128	751	....	....	....	....	....	39 773	39 773
ROBBS JETTY—																								
Cattle and Calves	90 338	3	3	....	1	1	....	1	96	155	260	527	....	....	63	2 177	2 767	70	130	....	....	....	3 501	3 701
Sheep and Lambs	883 716	....	....	....	....	....	6 372	....	....	9 349	15 721	....	29	....	13	93	135	....	322	....	....	....	88 459	88 781
WATSONS—																								
Pigs	119 689	1	....	....	....	....	....	2	46	583	632	....	....	2	12 060	2 947	15 009	....	24	....	....	....	13 713	13 737
ANCHORAGE—																								
Sheep and Lambs	37 358	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
COUNTRY DISTRICTS*—																								
Cattle and Calves	275 132	1	1	29	....	....	2	....	78	93	204	268	....	1	79	1 035	1 383	56	....	....	83	5	7 534	7 678
Sheep and Lambs	564 113	....	....	472	....	....	51	....	447	376	1 346	6	111	....	1 054	257	1 428	2	....	2 393	224	....	22 003	24 622
Pigs	82 071	2	2	2	....	....	....	1	204	121	332	7	....	....	330	197	534	....	....	....	....	13	11 159	11 172
Goats	3 906	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
TOTAL STATE—																								
Cattle and Calves	404 981	36	12	29	1	1	2	1	299	372	753	984	....	1	143	3 293	4 421	7 946	133	....	83	5	31 460	39 627
Sheep and Lambs	1 606 254	....	....	472	....	....	6 856	90	447	37 081	44 946	6	140	....	1 067	350	1 563	2	322	2 393	224	....	261 814	264 755
Pigs	313 723	7	2	2	....	....	....	3	423	1 001	1 438	10	....	8	13 004	3 272	16 294	....	24	....	....	13	64 645	64 682
Goats	3 906	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

NOTE: Country abattoirs included—

*Boulder, Bridgetown/Greenbushes, Bunbury, Busselton, Carnarvon, Dardanup/Capel, *Denmark, Esperance, Gingin, *Greenough, Harvey, *Katanning, Kojonup, *Manjimup, Merredin, *Moora, *Narrogin, Northam, Plantagenet, *Tammin, *Toodyay, Wagin, Waroona, *Wongan-Ballidu, Woodanilling.

* Only figures for stock slaughtered, no condemnation figures received.

FLY CAMPAIGN (BOTH PHASES) 1976/77

Summary of Results

Local Authority	No. of Persons Employed	Total Time of Employment—(In Weeks)	No. of Premises Visited	No. of Premises Inspected	No. of Premises where Breeding found	No. of Breeding Places found	Rubbish Bins	Buried Food Wastes	Poultry Keeping	Incinerators	Mulch	Compost Heaps	Blood and Bone	Animal Manure	Fowl Manure	Lawn Clippings	Other
City of Perth	12	264	24 589	23 291	1 139	1 311	698	105	5	22	31	121	4	31	72	222	....
City of Stirling	4	24	3 526	2 747	325	346	152	31	12	4	23	35	2	8	3	76	....
City of South Perth	2	28	2 698	2 598	120	149	39	9	13	2	5	35	1	10	5	30	....
City of Melville	7	70	10 405	10 111	496	510	195	22	9	11	13	81	....	9	2	168	....
City of Subiaco	3	30	4 733	4 349	99	99	52	4	1	....	11	14	....	7	....	8	2
City of Nedlands	2	28	4 818	4 748	64	64	24	....	2	....	....	16	....	....	....	20	2
Town of Canning	1	10	1 706	871	43	43	1	3	....	....	9	9	....	4	....	17	....
Town of Mosmans	1	4	1 469	1 385	27	27	18	3	2	1	....	3	....	....	....	....	....
Shire of Belmont	2	10	3 388	1 688	170	170	28	21	32	4	....	30	1	1	....	53	....
Shire of Kalamunda	1	8	2 506	2 386	317	317	280	....	....	....	....	16	....	6	9	6	....
Shire of Peppermint Grove	1	2	399	382	8	8	4	....	....	....	....	2	....	....	....	2	....
Shire of Rockingham	2	26	4 034	3 710	154	154	92	7	....	2	6	6	....	6	9	26	....
Shire of Wanneroo	2	29	3 928	2 901	80	80	52	....	....	....	3	7	....	2	5	10	1
Total	40	533	68 199	61 167	3 042	3 278	1 635	205	76	46	101	375	8	84	105	638	5

METROPOLITAN FLY CONTROL PLANNING COMMITTEE
(Summary of 1976/77 Campaign)

Report of Fly Control Officers Employed and Premises Inspected during both Phases of 1976/77 Campaign

Local Authorities Participating	13
Students Employed	7
Mature Aged Persons Employed	33
Premises Visited	68 199
Premises Inspected	61 167
Premises Breeding Flies	3 042

Breeding Sites

	%
Rubbish Bins	49·9
Buried Food Wastes	6·3
Poultry Keeping	2·3
Incinerators	1·4
Mulch	3·1
Compost Heaps	11·4
Blood and Bone	0·2
Animal Manure	2·6
Poultry Manure	3·2
Lawn Clippings	19·5
Other	0·1

Comparative Figures of Breeding

	%		%
1961/62	22·3	1969/70	8·1
1962/63	23·5	1970/71	7·9
1963/64	10·0	1971/72	6·7
1964/65	10·0	1972/73	5·0
1965/66	9·4	1973/74	6·0
1966/67	7·9	1974/75	4·5
1967/68	6·7	1975/76	4·8
1968/69	9·0	1976/77	5·0

METROPOLITAN FLY CONTROL PLANNING COMMITTEE—FLY CAMPAIGN 1976/77
(Comparison with 1975/76—Both Phases)

	No. of Premises Inspected		No. of Houses Breeding Flies		Percentage of Houses Breeding Flies	
	1975/76	1976/77	1975/76	1976/77	1975/76	1976/77
City of Perth	23 671	23 291	1 229	1 139	5·2	4·9
City of Stirling	2 666	2 747	234	325	8·8	11·8
City of South Perth	1 788	2 598	67	120	3·7	4·6
City of Melville	11 384	10 111	590	496	5·2	4·9
City of Subiaco	4 140	4 349	251	99	6·1	2·3
City of Nedlands	2 714	4 748	44	64	1·6	1·3
Town of Canning	1 242	871	9	43	0·7	4·9
Town of Mosmans	749	1 385	21	27	2·8	1·9
Shire of Belmont	....	1 688	....	170	....	10·1
Shire of Kalamunda	3 663	2 386	233	317	6·4	13·3
Shire of Peppermint Grove	272	382	6	8	2·2	2·1
Shire of Rockingham	3 443	3 710	130	154	3·8	4·2
Shire of Wanneroo	2 233	2 901	42	80	1·9	2·7

STATISTICAL SUMMARY OF ANNUAL FLY CAMPAIGN 1976/77
(Figures Brought Forward from 1969/70)

Year	Number of Local Authorities		No. of Vacancies	Total No. of Weeks	No. of Premises Inspected	No. of Premises Visited	No. of Premises Breeding Flies	Percentage of Houses Inspected Breeding Flies	No. of Breeding Places Found
	Metropolitan	Country							
1969/70	14	1	41	327	40 643	52 688	3 303	8·1	3 481
1970/71	16	1	35	343	51 121	61 080	4 050	7·9	4 539
1971/72	16	....	35	440	66 487	75 895	4 477	6·7	4 737
1972/73	16	....	42	564	75 133	86 051	3 728	5·0	4 066
1973/74	15	1	41	564	69 787	76 750	4 154	6·0	4 369
1974/75	16	....	51	625	78 504	89 051	3 545	4·5	3 818
1975/76	14	....	40	551	61 419	70 350	2 938	4·8	3 140
1976/77	13	....	40	533	61 167	68 199	3 042	5·0	3 278

FLY CAMPAIGN (BOTH PHASES) 1977/78

(Summary of Results)

Local Authority	No. of Persons Employed	Total Time of Employment—(In Weeks)	No. of Premises Visited	No. of Premises Inspected	No. of Premises where Breeding found	No. of Breeding Places found	Rubbish Bins	Buried Food Wastes	Poultry Keeping	Incinerators	Mulch	Compost Heaps	Blood and Bone	Animal Manure	Fowl Manure	Lawn Clippings	Other
City of Melville	8	88	16 931	16 127	1 019	1 055	425	62	6	15	53	182	....	31	21	244	16
City of Nedlands	2	38	2 697	2 678	29	29	5	2	....	....	....	7	....	2	3	10	....
City of Perth	11	264	25 100	24 314	1 199	1 433	762	120	19	23	32	132	....	21	80	244	....
City of South Perth	2	10	769	741	18	19	7	2	1	....	1	1	....	3	....	4	....
City of Stirling	3	23	3 825	2 968	242	242	113	22	16	13	10	20	2	11	....	35	....
City of Subiaco	1	10	1 689	1 498	47	47	22	....	....	....	....	18	....	....	3	4	....
Town of Bassendean	1	4	884	884	71	71	3	2	1	3	7	8	....	5	1	41	....
Town of Canning	1	9	2 210	1 085	109	109	3	2	....	....	1	8	2	7	....	86	....
Town of Cottesloe	1	7	1 863	1 863	71	71	7	1	....	....	13	33	....	1	....	16	....
Town of Mosman Park	1	2	701	641	13	13	11	....	....	....	....	2	....	....	....	....	....
Shire of Belmont	2	29	4 506	2 024	87	87	15	8	4	3	3	7	....	....	1	33	13
Shire of Kalamunda	1	7	1 497	1 414	51	51	6	....	....	....	....	20	....	3	3	19	....
Shire of Rockingham	2	24	4 346	4 058	245	271	155	6	....	5	13	29	....	2	7	48	6
Shire of Wanneroo	1	6	1 252	832	21	21	14	....	2	....	2	2	....	....	1	....	....
Totals	37	521	68 270	61 127	3 222	3 519	1 548	227	49	62	135	469	4	86	120	784	35

METROPOLITAN FLY CONTROL PLANNING COMMITTEE

(Summary of 1977/78 Campaign)

Report of Fly Control Officers Employed and Premises Inspected during both Phases of 1977/78 Campaign

Local Authorities Participating	14
Students Employed	5
Mature Aged Persons Employed	32
Premises Visited	68 270
Premises Inspected	61 127
Premises Breeding Flies	3 222

Breeding Sites

	%
Rubbish Bins	44·0
Buried Food Wastes	6·4
Poultry Keeping	1·4
Incinerators	1·7
Mulch	3·8
Compost Heaps	13·3
Blood and Bone	0·1
Animal Manure	2·4
Poultry Manure	3·4
Lawn Clippings	22·3
Other	1·0

Comparative Figures of Breeding

	%		%
1961/62	22·3	1969/70	8·1
1962/63	23·5	1970/71	7·9
1963/64	10·0	1971/72	6·7
1964/65	10·0	1972/73	5·0
1965/66	9·4	1973/74	6·0
1966/67	7·9	1974/75	4·5
1967/68	6·7	1975/76	4·8
1968/69	9·0	1976/77	5·0
		1977/78	5·3

METROPOLITAN FLY CONTROL PLANNING COMMITTEE—FLY CAMPAIGN 1977/78

(Comparison with 1976/77—Both Phases)

Local Authority	No. of Premises Inspected		No. of Premises Breeding Flies		Percentage of Premises Breeding Flies	
	1976/77	1977/78	1976/77	1977/78	1976/77	1977/78
City of Melville	10 111	16 127	496	1 019	4·9	6·3
City of Nedlands	4 748	2 678	64	29	1·3	1·0
City of Perth	23 291	24 314	1 139	1 199	4·9	4·9
City of South Perth	2 598	741	120	18	4·6	2·4
City of Stirling	2 747	2 968	325	242	11·8	8·1
City of Subiaco	4 349	1 498	99	47	2·3	3·1
Town of Bassendean	....	884	....	71	....	8·0
Town of Canning	871	1 085	43	109	4·9	10·0
Town of Cottesloe	....	1 863	....	71	....	3·8
Town of Mosman Park	1 385	641	27	13	1·9	2·0
Shire of Belmont	1 688	2 024	170	87	10·1	4·3
Shire of Kalamunda	2 386	1 414	317	51	13·3	3·6
Shire of Rockingham	3 710	4 058	154	245	4·2	6·0
Shire of Wanneroo	2 901	832	80	21	2·7	2·5

STATISTICAL SUMMARY OF ANNUAL FLY CAMPAIGN 1977/78

(Figures Brought Forward from 1969/70)

Year	Number of Local Authorities		No. of Vacancies	Total No. of Weeks	No. of Premises Inspected	No. of Premises Visited	No. of Premises Breeding Flies	Percentage of Premises Inspected Breeding Flies	No. of Breeding Places Found
	Metropolitan	Country							
1969/70	14	1	41	327	40 643	52 688	3 303	8·1	3 481
1970/71	16	1	35	343	51 121	61 080	4 050	7·9	4 539
1971/72	16	....	35	440	66 487	75 895	4 477	6·7	4 737
1972/73	16	....	42	564	75 133	86 051	3 728	5·0	4 066
1973/74	15	1	41	564	69 787	76 750	4 154	6·0	4 369
1974/75	16	....	51	625	78 504	89 051	3 545	4·5	3 818
1975/76	14	....	40	551	61 419	70 350	2 938	4·8	3 140
1976/77	13	....	40	533	61 167	68 199	3 042	5·0	3 278
1977/78	14	....	37	521	61 127	68 270	3 222	5·2	3 519

Appendix XIV

Food and Nutrition Section

J. R. Edinger, B.Sc., A.R.A.C.I.
Food and Nutrition Officer

1. GENERAL COMMENT

1.1 Food legislation in Australia is receiving increasing attention from States, the Territories and the Commonwealth. July of 1977 saw the inaugural meeting of the State and Territory Food Legislation Working Party in Canberra (S.T.F.L.W.P.). At this meeting after discussion and deliberation it was unanimously decided that such a Committee could serve a dual purpose in its mode of action. It could complement the National Health and Medical Research Council Food Standards Committee by converting Food Standards into Regulation style drafts suitable for uniform legislation in States, Territory and the Australian Capital Territory and by preparing uniform Food Regulations when the Uniform Food Act is completed by the Food Law Revision Task Force Committee. To establish a strong link with the N.H. and M.R.C. it was also decided that the S.T.F.L.W.P. could be better served if it was a Standing Committee of the N.H. and M.R.C. Council agreed with this deliberation and the S.T.F.L.W.P. has now become the N.H. and M.R.C. Food Legislation Committee, a full Standing Committee with States representation and having its own terms of reference. The F.L.C. should prove to be the co-ordinating Committee for all areas of food legislation.

1.2 During 1977 two meetings of the States and Territories Food Law Revision Task Force were held and satisfactory progress was made in the progress of the proposed Uniform Food Act.

1.3 Two meetings held in Melbourne by the Standards Association of Australia's Committee CS/13—"Plastics for Food Contact Use", resulted in the creation of two Standards, namely, one for Polyvinyl Chloride (P.V.C.) and one for Polyethylene (P.E.) both of which have now been published.

1.4 Meetings of the National Therapeutics Goods Committee held in Canberra in April and November were attended and of particular import is the proposed Regulation for Disinfectants, Antiseptics and Sanitisers, which is nearing completion. Also, of interest is the considerable amount of work and deliberation being given by Committee to so-called "border-line" therapeutic goods and decisions on each one should be arrived at in 1978.

2. SAMPLING PROGRAMMES, INVESTIGATIONS AND ALLIED WORK

Many samples of food were routinely tested as in previous years and the details of type of sample, results and other comments are given in the Chief Health Surveyors report under the Food and Liquor Section. For this reason only items of particular import are detailed hereunder.

2.1 Shark Sampling for Mercury Content

Routine sampling was carried out at the Metropolitan Fish Markets and and sharks with a mercury content in excess of the prescribed level of 0·5 mg/kg, offered for sale, were condemned.

In co-operation with the Western Australian Marine Research Laboratories, Department of Fisheries and Wildlife, a combined report on "Mercury in Shark in Western Australia" was published as Fisheries Research Bulletin Number 18. This is undoubtedly the most comprehensive scientific treatise on mercury in sharks containing complete statistical data, which has been published. My sincere thanks are extended to my co-authors in Dr. D. A.

Hancock and Mr. J. S. Edmonds who were extremely co-operative in all the work and finally responsible for the "polishing up" process and tabulation of all the statistical data.

2.2 Frozen Foods

In June the "Code of Practice for Processing, Transport, Handling, Storage and Sale of Frozen Foods" was published.

Particular attention was given to the structuring of the part of the code dealing with the transport of frozen foods to make it a practicable guide where Western Australia's climatic extremes prevail and where forms of transport such as rail, road, shipping and other forms of transportation are involved.

The Code of Practice should prove to be an invaluable guide to Health Surveyors in their day to day work as well as to all the people involved in the frozen food industry.

2.3 Pesticides and Toxic Substances Residues in Food Survey.

Two Market Basket Surveys of foods in Western Australia were conducted during the year and the samples forwarded to the N.H. and M.R.C. for examination and ultimate report.

2.4 Plastics for Food Contact Use

An amendment was made to the Food and Drug Regulation A.06—"Prevention of Contamination of Food" prescribing maximum levels for vinyl chloride monomer in polyvinyl chloride materials used for food contact use in rigid containers, flexible packaging films and definite limits of the monomer resulting from migration into foods.

3. WESTERN AUSTRALIAN FOOD AND DRUG ADVISORY COMMITTEE MEETINGS AND AMENDMENTS TO THE FOOD AND DRUG REGULATIONS

3.1 Three meetings of the Advisory Committee were held during the year and these proved to be most productive, as apart from the many items discussed, seventeen amendments to the Food and Drug Regulations were accomplished.

3.2 At this time of writing, all these completely redrafted regulations incorporating the amendments have been gazetted.

3.3 A new sampling procedure for packs of frozen cooked prawns, together with microbiological standards developed in Western Australia based on the results of work on samples carried out by our State Health Laboratories is gazetted under the Fish and Fish Products Regulation.

3.4 Other amendments of importance are those to general labelling requirements, ale, beer and stout, edible oils, margarine, bread, vitamins and minerals and a new section for "low calorie fruit juice cordials" under the Regulation for Fruit Juice cordials.

4. APPRECIATION

My thanks are tendered to the Chief Health Surveyor, Mr. J. F. Slattery and all the members of his staff who have assisted me in the sampling of food, investigations as and when required, culminating in appropriate action where necessary. In particular, Mr. G. Kaiser of the Food and Liquor Inspection Section has been of great assistance during the past year and his personal help on many occasions has proved invaluable.

Appendix XV

Statistics Branch

Marlene M. Lugg
M.T. Sc.D., M.P.H., F.H.A., F.A.P.H.A., F.R.S.H.
Health Statistician

HOSPITAL MORBIDITY STATISTICS

GENERAL

As in previous years, the Hospital Morbidity Statistics system has been used widely throughout Western Australia by not only the Health Services but also individual hospitals and other organisations. With stringent constraints upon availability of funds and staff levels throughout the Health Service, informed planning and rational allocation of priorities among projects are essential, and the Hospital Morbidity Statistics system has shown itself to be an invaluable tool in this process.

I should like to take this opportunity to again thank all hospital and medical personnel in public and private hospitals whose continued co-operation makes it possible for this system to be maintained. The continued assistance of the Australian Bureau of Statistics with this and other general statistical collections is gratefully acknowledged.

Virtually all organisations involved in the maintenance of the Hospital Morbidity Statistics system, at any level from the supply of raw data, to coding, data takeup and computer analysis of results, are operating under constraints necessitated by the present economic climate. It is to the very great credit of all concerned that it has been possible to maintain the quality of this system despite the staff shortages which are reflected in the later than usual availability of output from the system.

Revised population estimates for the years 1971–1976 have recently been issued by the Australian Bureau of Statistics and rates per thousand population have been recomputed accordingly throughout the Hospital Morbidity Statistics tables included in this Report.

TOTAL DISCHARGES

The total number of hospital discharges during 1977 increased by 3·8 per cent to 273 109 over the 1976 total of 263 142. The hospitalisation rate per thousand population increased to 228 although it must be remembered that the 1977 population figures from which rates are calculated are subject to revision. Admissions during which at least one operation was performed increased by 5·3 per cent (132 211 to 139 184) thus continuing the trend of recent years.

Hospitalisation for accidental injury increased but the in-hospital death rate for admissions resulting from trauma has continued its decline and in 1977 reached seven per thousand admissions, the lowest since total statistics have been available.

Hospital Discharge Rates W.A. 1971-77

Year	Rate per 1 000 Population Perth	Rural	Total State
1971	167	273	203
1972	178	291	214
1973	178	300	218
1974	183	291	218
1975	191	296	225
1976	192	296	225
1977	196	299	228

As in previous years, there has been almost no variation in hospitalisation patterns by disease, sex or age groups. Accidental injury continues to be the main reason for admission of males to hospital, followed by diseases of the respiratory system and the digestive system, in that order. For females, pregnancy and childbirth are still the main reason for hospital admission (in spite of a declining birth rate), followed by diseases of the genito-urinary system and supplementary classifications. Of course the pattern varies greatly by age groups (Tables 5 and 6). The overall leading cause of admission in Western Australia remains accidental injury.

LENGTH OF STAY

The Teaching hospitals continue to have the longest average stay at 8·5 days, Private hospitals having the shortest (6·6 days) and other Government and Board hospitals are between at 7·0 days. The mean length of stay for all hospitals has declined to 7·4 days, resulting in a slight decline in the total bed days of care despite the rise in the number of hospital discharges.

Mean Length of Stay by Type of Hospital W.A. 1971-77

Year	Mean Length of Stay (days) Teaching	 Govt. & Board	 Private	 All Hospitals
1971	10·6	8·1	7·4	8·7
1972	10·1	7·9	7·0	8·3
1973	9·6	7·7	7·0	8·1
1974	9·5	7·6	6·7	8·0
1975	9·1	7·2	6·7	7·6
1976	9·1	7·3	6·7	7·8
1977	8·5	7·0	6·6	7·4

The mean stay for operations continued to drop to 6·6 days in 1977 from 6·8 days in 1976 and 7·0 days in 1975.

Although the mean length of stay for admissions due to accidental injury continued to drop (to 7·4 days from 7·9 days in 1976) this group still accounts for 12·6 per cent of all discharges and 12·7 per cent of total hospital bed days.

TYPE OF HOSPITAL

Government and Board hospitals accounted for a slightly higher proportion of all discharges than has previously been the case.

Distribution of Discharges by Type of Hospital W.A. 1971-76

Year	Type of Hospital Teaching	 Govt. & Board	 Private
	%	%	%
1971	29·5	47·7	22·8
1972	29·2	47·4	23·4
1973	29·9	46·9	23·2
1974	30·7	46·1	23·2
1975	31·7	46·4	21·9
1976	32·4	47·0	20·6
1977	31·2	49·2	19·6

SURGICAL OPERATIONS

Fifty per cent of all hospital discharges had at least one surgical operation during their hospital stay. This ranges from a low of 37 per cent in Government and Board hospitals to a high of 78 per cent in Private hospitals. In the Teaching hospitals 56 per cent of discharges had at least one surgical operation.

For females, surgery on the genital tract remains the leading type of surgical operation followed by obstetric operations and operations on the abdomen. For males, however, the pattern of previous years has been slightly altered with a reversal in the position of the two most common operation groups. Orthopaedic surgery is now the leading type of surgical operation for males, followed by surgery on the abdomen and operations of the urinary and genital organs.

HOSPITALISATION AND VITAL STATISTICS

An interesting side effect of the lower birthrate is shown in Table 7 which shows a corresponding reduction of the birthrate per 1000 females aged 15–44 and lower discharge rate for pregnancy and related conditions of the antenatal and post-natal period. Thus as the birthrate per 1 000 females in this age group has decreased from 111·5 to 78·1, the related hospital discharges have decreased from 142·6 to 102·5.

CO-OPERATION WITH OTHER BRANCHES AND OUTSIDE ORGANISATIONS

The Statistics Branch continues to serve other Branches of the Public Health and Medical Departments in an advisory capacity, and to participate in joint projects with other Branches and outside organisations.

Major projects of this nature in which the Branch has been intimately concerned include the following.

Mental Health Register

The Health Statistician also directs the work of the Statistical Research Unit of Mental Health Services. During 1977, a major review of the Mental Health statistical data collection was undertaken. This review confirmed the need to maintain the system, and placed high priority upon completion of the internal computer system (already under development) that will enable flexible analysis of information collected since 1966.

Professional staff of the Branch have devoted much time and effort to the design and development of the internal data processing system, and Mental Health Services has employed temporary clerical staff to commence manual validation of the accumulated statistical records of selected patients. It is expected that some output from the system will become available during 1978, but full development of such a major and complex system may be expected to take some time in a situation of resource limitations.

Medical and Nursing Manpower

In conjuction with the Medical Board of Western Australia, a survey was conducted covering all medical practitioners registered in Western Australia. Response from doctors was excellent and overall results of the survey were presented in a joint report of the Medical Board and the Public Health Department. Preparations have been made to conduct a further such survey in 1978.

A similar survey of all nurses registered in the State was also conducted in conjunction with the Nurses Board of Western Australia, building upon results obtained from the survey of registered nurses conducted in the previous year. In this survey, the Statistics Branch is not only concerned with the uptake and analysis of data but as a service to the Board, maintains on computer a listing of names and addresses of registered nurses. It then addresses by computer the eleven thousand re-registration forms which must be sent annually to registered nurses.

Dental Therapist Activity Analysis

Early in 1977, the Branch was approached by a member of staff of the Dental Therapy School of the Western Australian Institute of Technology to assess the activities of dental therapists in an "optimal" private practice setting. With the active support of a private dental practice that employs dental therapists and attempts to utilise to the full their capabilities, a survey was designed and conducted recording details of every dental service (including prophylaxis) provided by any member of staff of the clinic over a six month period. Results of the survey provide interesting insight into the potential value of this relatively new group of support staff in private dental practice.

Aboriginal Population Statistics

To assess the special health needs of Aborigines and to measure improvement in their health status, it is essential that accurate figures on the size and structure (by age and sex) of the Aboriginal population be available. The Branch has co-operated with

Community and Child Health Services and the Office of the North West in a project to estimate the size and structure of the Aboriginal population living in the north of Western Australia.

Human Genetics

In 1977, the Human Genetics Society of Australasia was formed. Western Australia was recognised as having investigated in most depth the question of data collection systems relating to genetic disorders and was invited to present the major paper on this subject at the inaugural meeting of the national association. The feasibility studies conducted in Western Australia had been a joint effort of the Branch and the Human Genetics Society of Western Australia and at the request of the Society, the paper for the national meeting was prepared within the Branch and presented at the inaugural national meeting in Melbourne in August by the Assistant Health Statistician. Co-operation between the Branch and the Human Genetics Society of Western Australia continues.

Midwives Data Collection System

This system, which collects information on all infants born in the State, is a joint system of the Statistics Branch and Community and Child Health Services. It has now been operating for three years and it was felt appropriate to review its operation at this time. The review, supervised by a Senior Medical Officer of Community and Child Health Services, involved extensive referral back to hospital records, discussion with midwives who fill in the forms and comparison of output from this system with other sources of information. Findings of the review will be taken into account as the ongoing effort to reach ever higher standards of data quality continues.

General

The above are only a few of the many joint projects with which the Branch has been involved during 1977. It would be impossible to list all the services provided to other Branches and organisations—these range from analysis of dental surveys of school children in areas with fluoridated and unfluoridated water (School Dental Service), occupational health surveys (Occupational Health Branch) and results of water sampling (Health Surveying Branch) to surveys of the nutritional status of school children (W.A.I.T. and Community and Child Health Services).

Co-operation with a variety of organisations has followed the further revision by the World Health Organisation of the International Classification of Diseases. The ninth revision will come into effect on January 1, 1979 and coding of hospital morbidity and causes of mortality are to be modified accordingly on that date. Preliminary work towards this conversion is under way and the Assistant Health Statistician attended the Australian conversion course conducted in Sydney in November/December by the World Health Organisation. The Branch is working closely with the Australian Bureau of Statistics and other organisations to ensure an orderly transition to the new coding system.

OTHER ACTIVITIES AND ITEMS OF INTEREST

The Branch and its staff continue to participate in the development of policy and information systems at National, State and Departmental level.

In 1977, the National Committee on Health and Vital Statistics met for the first time and the Health Statistician who represents Western Australia on this Committee was elected Deputy Chairman. Working Parties have been established by the Committee to make recommendations concerning requirements for national statistics in certain major subject areas, and a Working Party has been established in Western Australia to make recommendations on Perinatal Statistics. The Health Statistician is a member of the Working Party and the Assistant Health Statistician was co-opted to contribute also. The second meeting of the National Committee was held in Perth in November and several members of the Branch staff were able to be present as observers during the two day meeting.

The Health Statistician continues to serve as a member of the State Statistical Requirements and Co-ordination Committee established by the Premier in 1975, and to serve on a variety of Departmental and inter-Departmental Committees.

The Branch maintains its involvement with training the coming generation of health professionals. As in past years, practical training and assistance has been provided for fifth year medical students as part of their Social and Preventive Medicine course, and medical students are employed during the summer vacation for special public health projects. By invitation, both the Health Statistician and Assistant Health Statistician lectured on survey methods and health statistics to students of the allied health professions at the Western Australian Institute of Technology. Lectures have also been given to other interested groups, and acquainting suppliers and users of data with available data and its effective use continues to be an important aspect of the Branch's work.

It has again been a busy year for the Statistics Branch and I should like to thank all staff who have worked to maintain the quality of the Branch's output and to meet deadlines despite the effects of shortages of staff and resources.

Appendix XVI

Hospital In-Patient Statistics for 1977

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TABLE 1
DISCHARGES FROM W.A. HOSPITALS 1977
SUMMARY BY AGE GROUPS AND LENGTH OF STAY (DAYS)

Description	Age Groups					
	0–4	5–14	15–44	45–64	65 and Over*	Total
ALL DISCHARGES—						
Number	27 198	27 407	130 783	51 230	36 491	273 109
Percentage of Total	10·0	10·0	47·9	18·8	13·4	100·0
Length of Stay	130 113	106 539	741 715	450 199	590 959	2 019 525
Percentage of Total	6·4	5·3	36·7	22·3	29·3	100·0
Average Length of Stay	4·8	3·9	5·7	8·8	16·2	7·4
OPERATION CASES ONLY—						
Number	6 096	14 190	76 418	28 380	14 100	139 184
Percentage of Total	4·4	10·2	54·9	20·4	10·1	100·0
Length of Stay	23 398	53 513	421 242	226 775	195 009	919 937
Percentage of Total	2·5	5·8	45·8	24·7	21·2	100·0
Average Length of Stay	3·8	3·8	5·5	8·0	13·8	6·6
EXTERNAL CAUSE (INJURY)—						
Number	3 377	5 355	17 291	4 961	3 483	34 467
Percentage of Total	9·8	15·5	50·2	14·4	10·1	100·0
Length of Stay	12 804	22 530	104 710	53 993	62 353	256 390
Percentage of Total	5·0	8·8	40·8	21·1	24·3	100·0
Average Length of Stay	3·8	4·2	6·1	10·9	17·9	7·4

* Includes ages not stated

TABLE 2
AGE SPECIFIC HOSPITAL DISCHARGES—W.A. 1968—1977

Year	Age Groups							
	Under 15		15–64		65+		Total	
	Number of Discharges	Percentage of Total	Number of Discharges	Percentage of Total	Number of Discharges	Percentage of Total	Number of Discharges	Percentage of Total
1968	34 215	27·57	72 379	58·33	17 495	14·10	124 089	100
1969	39 926	27·65	83 262	57·66	21 212	14·69	144 400	100
1970	41 404	27·69	86 420	57·79	21 725	14·53	149 549	100
1971	49 399	23·37	135 516	64·12	26 434	12·51	211 394	100
1972	54 184	23·60	146 507	63·81	28 902	12·59	229 593	100
1973	55 087	23·18	152 036	63·98	30 511	12·84	237 634	100
1974	53 046	21·77	159 625	65·50	31 032	12·73	243 703	100
1975	54 330	21·07	170 237	66·04	33 233	12·89	257 800	100
1976	54 380	20·67	174 240	66·22	34 522	13·12	263 142	100
1977	54 605	19·99	182 013	66·64	36 491	13·36	273 109	100

TABLE 3
DISCHARGES FROM W.A. HOSPITALS—1971-1977
SUMMARY BY AGE GROUPS

Description	Age Groups												
	0–4		5–14		15–44		45–64		65 and over		Total		
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	% change
All Discharges—													
1971	25 898	243	23 501	114	99 412	213	36 104	193	26 434	342	211 349	203	N/A
1972	28 426	257	25 758	124	107 007	223	39 500	206	28 902	361	229 593	214	+ 8·6
1973	29 831	268	25 256	121	110 075	225	41 961	214	30 511	366	237 634	218	+ 3·5
1974	28 128	254	24 918	117	115 514	228	44 111	220	31 032	359	243 703	218	+ 2·6
1975	27 938	254	26 392	121	122 945	235	47 292	230	33 233	370	257 800	225	+ 5·8
1976	27 772	260	26 608	120	124 757	232	49 483	235	34 522	369	263 142	225	+ 2·1
1977	27 198	256	27 407	121	130 783	236	51 230	239	36 491	378	273 109	228	+ 3·8
Operation Cases Only—													
1971	5 294	50	12 176	59	49 458	106	18 063	97	9 177	119	94 167	90	N/A
1972	5 828	53	13 019	63	56 274	117	19 860	103	10 536	131	105 517	99	+12·1
1973	5 863	53	12 609	60	57 524	117	21 013	107	11 083	133	108 092	99	+ 2·4
1974	6 202	56	12 783	60	61 968	122	22 752	113	11 403	132	115 108	103	+ 6·5
1975	6 318	58	13 324	61	68 030	130	25 261	123	12 513	139	125 446	109	+ 9·0
1976	5 971	56	13 440	61	72 100	134	27 363	130	13 337	147	132 211	113	+ 5·4
1977	6 096	57	14 190	63	76 418	138	28 380	132	14 100	146	139 184	116	+ 5·3
External Cause (Injury)—													
1971	3 154	30	4 231	21	14 960	32	4 352	23	2 838	37	28 535	27	N/A
1972	3 657	33	4 582	22	14 745	31	4 732	25	3 059	38	30 775	29	+ 7·9
1973	3 540	32	4 847	23	15 916	32	4 816	25	3 157	38	32 276	30	+ 4·9
1974	3 755	34	4 917	23	16 188	32	5 043	25	3 324	38	33 227	30	+ 2·9
1975	3 547	32	5 051	23	16 223	31	4 896	24	3 480	39	33 197	29	— 0·1
1976	3 563	33	5 299	24	16 295	30	4 742	22	3 434	37	33 333	28	+ 0·4
1977	3 377	32	5 355	24	17 291	31	4 961	23	3 483	36	34 467	29	+ 3·4

*Rate per 1 000 population—Recomputed on the basis of revised population estimates from Australian Bureau of Statistics (1971–1976) 1977–Preliminary.

TABLE 4

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1977

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths* Per 1 000 Separations
Sec. I													
000–009	Intestinal Infectious Diseases	2 548	2 451	15 673	14 318	6·2	5·8	0·78	0·71	4 834	145	20	4
010–019	Tuberculosis	144	80	4 453	2 323	30·9	29·0	0·22	0·12	197	22	5	22
020–027	Zoonotic Bacterial Diseases	3	1	15	4	5·0	4·0	0·00	0·00	4	....	....	....
030–039	Other Bacterial Diseases	237	182	4 078	2 842	17·2	15·6	0·20	0·14	348	28	43	102
040–046	Poliomyelitis and Other Enterovirus Diseases of Central Nervous System	99	73	471	358	4·8	4·9	0·02	0·02	168	4	....	....
050–057	Viral Diseases Accompanied by Exathem	299	283	2 037	2 012	6·8	7·1	0·10	0·10	570	11	1	1
060–068	Arthropod-borne Viral Diseases	12	7	1 253	30	104·4	4·3	0·06	0·00	17	1	1	52
070–079	Other Viral Diseases	1 573	1 583	5 425	5 977	3·4	3·8	0·27	0·30	3 124	24	8	2
080–089	Rickettsioses and Other Arthropodborne Diseases	33	11	142	47	4·3	4·3	0·01	0·00	43	1	....	....
090–099	Syphilis and Other Venereal Diseases	190	308	806	1 008	4·2	3·3	0·04	0·05	493	4	1	2
100–104	Other Spirochaetal Diseases	6	5	38	25	6·3	5·0	0·00	0·00	11	....	....	....
110–117	Mycoses	100	82	1 202	718	12·0	8·8	0·06	0·04	168	10	4	21
120–129	Helminthiases	19	11	249	78	13·1	7·1	0·01	0·00	28	1	1	33
130–136	Other Infective and Parasitic Diseases	218	199	2 031	1 701	9·3	8·5	0·10	0·08	414	3	....	....
Sec. II													
140–149	Malignant Neoplasm of Bucca Cavity and Pharynx	133	53	2 083	1 143	15·7	21·6	0·10	0·06	160	7	19	102
150–159	Malignant Neoplasm of Digestive Organs and Peritoneum	536	353	10 105	11 497	18·9	32·6	0·50	0·57	663	30	196	220
160–163	Malignant Neoplasm of Respiratory System	698	133	12 822	2 596	18·4	19·5	0·63	0·13	594	31	206	247
170–174	Malignant Neoplasm of Bone Connective Tissue Skin and Breast	967	916	6 961	10 191	7·2	11·1	0·34	0·50	1 813	23	47	24
180–189	Malignant Neoplasm of Genito-Urinary Organs	662	571	7 707	8 648	11·6	15·1	0·38	0·43	1 113	30	90	72
190–199	Malignant Neoplasm of Other and Unspecified Sites	559	601	9 161	12 135	16·4	20·2	0·45	0·60	775	50	335	288
200–209	Neoplasms of Lymphatic and Haematopoietic Tissue	434	382	4 514	3 832	10·4	10·0	0·22	0·19	708	20	88	107
210–228	Benign Neoplasms	712	1 881	3 546	11 373	4·9	6·0	0·18	0·56	2 574	15	4	1
230–239	Neoplasms of Unspecified Nature	146	158	1 206	1 043	8·3	6·6	0·06	0·05	288	8	8	26
Sec. III													
240–246	Diseases of Thyroid Gland	58	332	632	3 194	10·9	9·6	0·03	0·16	382	6	2	5
250–258	Diseases of Other Endocrine Glands	795	930	8 402	15 495	10·6	16·7	0·42	0·77	1 617	76	32	18
260–269	Avitaminoses and Other Nutritional Deficiency	240	239	1 972	2 420	8·2	10·1	0·10	0·12	454	21	4	8
270–279	Other Metabolic Diseases	274	323	2 597	3 575	9·5	11·1	0·13	0·18	575	13	9	15

TABLE 4—*continued*

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1977—*continued*

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths* Per 1 000 Separations
Sec. IV													
280–289	Diseases of Blood and Blood Forming Organs	676	683	4 660	4 698	6·9	6·9	0·23	0·23	1 295	48	16	11
Sec. V													
290–299	Psychoses	552	639	9 789	14 213	17·7	22·2	0·48	0·70	1 048	132	11	9
300–309	Neuroses, Personality Disorders and Other Non-Psychotic Mental Disorders	3 676	2 353	43 058	28 381	11·7	12·1	2·13	1·41	5 535	478	16	2
310–315	Mental Retardation	16	20	94	354	5·9	17·7	0·00	0·02	35	1	....	....
Sec. VI													
320–324	Inflammatory Diseases of the Central Nervous System	120	112	1 351	1 407	11·3	12·6	0·07	0·07	185	40	7	30
330–333	Hereditary and Familial Diseases of Nervous System	30	13	244	272	8·1	20·9	0·01	0·01	38	3	2	46
340–349	Other Diseases of Central Nervous System	1 348	1 236	20 907	23 870	15·5	19·3	1·04	1·18	2 421	130	33	12
350–358	Diseases of Nerves and Peripheral Ganglia	732	963	6 017	6 599	8·2	6·9	0·30	0·33	1 666	27	2	1
360–369	Inflammatory Diseases of the Eye	617	549	4 011	3 409	6·5	6·2	0·20	0·17	1 152	14	....	....
370–379	Other Diseases and Conditions of the Eye	2 107	2 181	12 782	13 650	6·1	6·3	0·63	0·68	4 236	51	1	....
380–389	Diseases of the Ear and Mastoid Process	2 128	1 748	7 154	6 407	3·4	3·7	0·35	0·32	3 818	57	1	....
Sec. VII													
390–392	Active Rheumatic Fever	102	99	1 025	1 621	10·0	16·4	0·05	0·08	189	10	2	9
393–398	Chronic Rheumatic Heart Disease	107	112	1 340	1 385	12·5	12·4	0·07	0·07	207	11	1	4
400–404	Hypertensive Disease	741	1 091	6 536	10 668	8·8	9·8	0·32	0·53	1 759	56	17	9
410–414	Ischaemic Heart Disease	2 721	1 412	30 870	17 787	11·3	12·6	1·53	0·88	3 578	159	396	95
420–429	Other Forms of Heart Disease	1 817	1 419	23 680	24 439	13·0	17·2	1·17	1·21	2 797	155	284	87
430–438	Cerebrovascular Disease	1 253	1 030	32 107	29 836	25·6	29·0	1·59	1·48	1 642	274	367	160
440–448	Diseases of Arteries, Arterioles and Capillaries	678	389	14 306	6 978	21·1	17·9	0·71	0·35	924	58	85	79
450–458	Other Diseases of Circulatory System	2 050	2 829	18 998	27 504	9·3	9·7	0·94	1·36	4 751	81	47	9
Sec. VIII													
460–466	Acute Respiratory Infection (except Influenza)	2 910	2 253	12 143	9 002	4·2	4·0	0·60	0·45	5 092	62	9	1
470–474	Influenza	275	318	1 434	1 605	5·2	5·0	0·07	0·08	584	7	2	3
480–486	Pneumonia	1 918	1 348	18 177	12 549	9·5	9·3	0·90	0·62	2 964	142	160	48
490–493	Bronchitis, Emphysema and Asthma	4 200	3 000	27 984	19 750	6·7	6·6	1·39	0·98	7 018	122	60	8
500–508	Other Diseases of Upper Respiratory Tract	4 320	4 289	13 860	14 224	3·2	3·3	0·69	0·70	8 587	16	6	....
510–519	Other Diseases of Respiratory System	1 775	1 352	15 783	11 183	8·9	8·3	0·78	0·55	2 959	104	64	20

TABLE 4—*continued*

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1977—*continued*

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths* Per 1 000 Separations
Sec. IX													
520–529	Diseases of Oral Cavity, Salivary Glands and Jaws	2 214	2 925	5 129	6 291	2·3	2·2	0·25	0·31	5 126	13	....	....
530–537	Diseases of Oesophagus, Stomach and Duodenum	2 290	1 337	15 873	10 446	6·9	7·8	0·79	0·52	3 510	81	36	9
540–543	Appendicitis	2 009	2 389	12 278	14 141	6·1	5·9	0·61	0·70	4 321	77	....	....
550–553	Hernia of Abdominal Cavity	2 524	809	18 671	6 513	7·4	8·1	0·92	0·32	3 301	24	8	2
560–569	Other Diseases of Intestine and Peritoneum	1 661	1 783	14 298	15 482	8·6	8·7	0·71	0·77	3 272	111	61	17
570–577	Diseases of Liver, Gall Bladder and Pancreas	1 563	2 548	19 536	27 746	12·5	10·9	0·97	1·37	3 934	96	81	19
Sec. X													
580–584	Nephritis and Nephrosis	2 085	2 263	4 470	3 651	2·1	1·6	0·22	0·18	4 292	34	22	5
590–599	Other Diseases of Urinary System	1 834	2 385	12 069	15 849	6·6	6·6	0·60	0·78	4 107	83	29	6
600–607	Diseases of Male Genital Organs	3 143	....	24 221	....	7·7	....	1·20	....	3 088	44	11	3
610–616	Diseases of Breast, Ovary, Fallopian Tube and Parametrium	126	4 270	708	22 972	5·6	5·4	0·04	1·14	4 376	19	1	....
620–629	Diseases of Uterus and Other Female Organs	....	12 604	....	57 810	....	4·6	....	2·86	12 552	52	....	....
Sec. XI													
630–634	Complications of Pregnancy	....	3 076	....	11 739	....	3·8	....	0·58	2 827	249	....	....
635–639	Urinary Infections and Toxaemias of Pregnancy and Puerperium	....	897	....	4 172	....	4·7	....	0·21	838	58	1	1
640–645	Abortion	....	3 138	....	7 885	....	2·5	....	0·39	3 108	30	....	....
650–662	Delivery	....	20 168	....	170 842	....	8·5	....	8·46	19 949	219	....	....
670–678	Complications of the Puerperium	....	154	....	517	....	3·4	....	0·03	152	2	....	....
Sec. XII													
680–686	Infections of Skin and Subcutaneous Tissue	1 743	1 203	12 942	9 098	7·4	7·6	0·64	0·45	2 881	62	3	1
690–698	Other Inflammatory Conditions of Skin and Subcutaneous Tissue	371	414	2 909	3 040	7·8	7·3	0·14	0·15	761	23	1	1
700–709	Other Diseases of Skin and Subcutaneous Tissue	2 180	2 185	14 580	13 813	6·7	6·3	0·72	0·68	4 323	40	2	....
Sec. XIII													
710–718	Arthritis and Rheumatism except Rheumatic Fever	1 208	1 440	18 885	26 060	15·6	18·1	0·94	1·29	2 562	73	13	4
720–729	Osteomyelitis and Other Diseases of Bone and Joint	5 617	4 158	41 334	30 790	7·4	7·4	2·05	1·52	9 592	177	6	....
730–738	Other Diseases of Musculoskeletal System	1 060	1 505	6 543	11 688	6·2	7·8	0·32	0·58	2 541	17	7	2

TABLE 4—*continued*

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1977—*continued*

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths* Per 1 000 Separations
Sec. XIV													
740–759	Congenital Anomalies	1 416	1 197	9 674	7 238	6·8	6·0	0·48	0·36	2 488	79	46	17
Sec. XV													
760–779	Certain Causes of Perinatal Morbidity and Mortality	323	246	3 983	3 016	12·3	12·3	0·20	0·15	485	68	16	28
Sec. XVI													
780–789	Symptoms Referable to Systems or Organs	8 775	9 044	42 812	46 406	4·9	5·1	2·12	2·30	17 117	576	126	7
790–796	Ill-Defined Diseases	1 365	2 360	22 325	47 629	16·4	20·2	1·11	2·36	3 426	177	122	32
Sec. XVII													
800–809	Fracture of Skull, Spine and Trunk	1 880	837	19 232	10 103	10·2	12·1	0·95	0·50	2 506	183	28	10
810–819	Fracture of Upper Limb	2 027	1 353	9 214	7 082	4·5	5·2	0·46	0·35	3 267	107	6	1
820–829	Fracture of Lower Limb	1 784	1 207	29 523	27 981	16·5	23·2	1·46	1·39	2 634	314	43	14
830–839	Dislocation without Fracture	474	183	2 408	827	5·1	4·5	0·12	0·04	637	20	....	....
840–848	Sprains and Strains of Joints and Adjacent Muscles	508	294	2 931	1 612	5·8	5·5	0·15	0·08	782	20	....	....
850–854	Intracranial Injury (excluding those with Skull Fracture)	3 232	1 411	12 311	4 485	3·8	3·2	0·61	0·22	4 511	98	34	7
860–869	Internal Injury of Chest, Abdomen and Pelvis	256	76	2 906	989	11·4	13·0	0·14	0·05	313	13	6	18
870–879	Laceration and Open Wound of Head, Neck and Trunk	1 142	582	5 222	2 297	4·6	3·9	0·26	0·11	1 681	41	2	1
880–887	Laceration and Open Wound of Upper Limb	1 480	377	5 313	1 346	3·6	3·6	0·26	0·07	1 831	26	....	....
890–897	Laceration and Open Wound of Lower Limb	806	403	4 680	2 885	5·8	7·2	0·23	0·14	1 193	16	....	....
900–907	Laceration and Open Wound of Multiple Location	238	132	1 117	692	4·7	5·2	0·06	0·03	351	19	....	....
910–918	Superficial Injury	318	171	1 309	742	4·1	4·3	0·06	0·04	481	8	....	....
920–929	Contusion and Crushing with Intact Skin Surface	709	378	3 089	1 836	4·4	4·9	0·15	0·09	1 053	33	1	....
930–939	Effects of Foreign Body Entering through Orifice	284	228	599	566	2·1	2·5	0·03	0·03	499	12	1	1
940–949	Burn	996	424	9 792	5 018	9·8	11·8	0·48	0·25	1 343	66	11	7
950–959	Injury to Nerves and Spinal Cord	87	34	437	289	5·0	8·5	0·02	0·01	119	2	....	....
960–979	Adverse Effect of Medicinal Agents	929	1 471	3 776	5 106	4·1	3·5	0·19	0·25	2 309	87	4	1
980–989	Toxic Effect of Substances Chiefly Non-Medicinal as to Source	899	485	1 685	791	1·9	1·6	0·08	0·04	1 357	24	3	2
990–999	Other Adverse Effects	2 505	1 753	15 866	12 634	6·3	7·2	0·79	0·63	4 095	140	23	5

TABLE 4—*continued*

W.A. HOSPITALS—PATIENTS DISCHARGED DURING 1977—*continued*

I.C.D. Categories	Disease Groups	Number of Cases		Number of Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths Per 1 000 Separations
Sec. Y													
Y00–Y09	Examination and Investigation of Specific Systems without Reported Diagnosis	2 192	4 529	7 205	11 321	3·3	2·5	0·36	0·56	6 656	64	1	....
Y10–Y19	Other Examinations without Reported Diagnosis	40	22	332	162	8·3	7·4	0·02	0·01	59	3	....	....
Y20–Y29	Medical and Surgical Procedures without Reported Diagnosis	42	40	336	426	8·0	10·7	0·02	0·02	78	4	....	....
Y30–Y39	Medical and Surgical Aftercare without Current Complaint or Sickness	1 941	1 237	11 148	8 328	5·7	6·7	0·55	0·41	3 113	45	20	6
Y40–Y49	Persons Undergoing Preventive Measures	1 655	5 146	2 297	12 773	1·4	2·5	0·11	0·63	6 788	12	1	....
Y50–Y59	Elective Surgery	665	1 205	1 536	9 294	2·3	7·7	0·08	0·46	1 866	4	....	....
Y60–Y69	Maternal and Well-Baby Care	189	1 276	1 082	5 900	5·7	4·6	0·05	0·29	1 325	140	....	....
Y70–Y79	Other Persons without Current Complaint or Sickness	85	337	382	1 973	4·5	5·9	0·02	0·10	404	18	....	....
Y80–Y89	Healthy Live Born Infants according to Type of Birth	....	....	....	....	....	....	....	....	....	....	....	....
	Total	119 434	153 675	896 859	1 122 666	7·5	7·3	44·41	55·59	262 795	6 825	3 489	12
	Grand Total, Male and Female	273 109		2 019 525		7·4		100·00					

* Figures truncated to whole numbers.

TABLE 5

W.A. HOSPITALS 1977—AGE DISTRIBUTION OF PATIENTS DISCHARGED BY SEX AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition	Age Groups															Not Stated	Total All Ages
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+		
	MALES																	
000–136	Infective and Parasitic	2 372	648	374	256	364	311	201	135	117	123	101	91	98	92	196	2	5 481
140–239	Neoplasms	83	67	76	91	95	138	140	153	187	283	381	503	551	680	1 418	1	4 847
240–279	Endocrine, Nutritional, Metabolic	246	32	44	37	44	60	40	62	73	74	116	125	100	112	200	2	1 367
280–289	Blood and Blood Forming Organs	90	108	75	38	37	24	25	18	34	18	21	27	36	20	105	....	676
290–315	Mental Disorders	114	39	40	120	316	381	463	492	421	497	445	306	202	149	251	8	4 244
320–389	Nervous System and Sense Organs	1 107	940	348	256	317	358	370	335	305	386	373	375	395	412	799	6	7 082
390–458	Circulatory System	41	43	57	88	150	263	334	432	490	650	953	1 010	1 206	1 252	2 490	10	9 469
460–519	Respiratory System	4 968	2 655	938	609	632	568	451	376	331	377	412	469	563	595	1 443	11	15 398
520–577	Digestive System	897	777	803	799	852	881	865	737	714	796	843	763	763	663	1 098	10	12 261
580–629	Genito-Urinary System	549	315	192	205	393	470	360	463	476	273	605	504	757	532	1 002	92	7 188
680–709	Skin and Subcutaneous Tissue	397	306	310	408	410	353	279	244	210	226	240	214	186	196	312	3	4 294
710–738	Musculoskeletal System	127	154	195	453	698	789	778	784	669	657	634	550	487	402	504	4	7 885
740–759	Congenital Anomalies	550	323	181	91	49	43	34	22	18	14	14	17	15	21	24	....	1 416
760–779	Perinatal Morbidity	321	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	323
780–796	Symptoms and Ill-defined Conditions	1 413	735	573	434	552	549	580	537	531	654	620	548	572	556	1 278	8	10 140
N800–N999	Accidents, Poisoning and Violence	1 904	1 604	1 692	3 022	3 019	2 153	1 471	1 044	929	839	718	592	475	371	679	42	20 554
Y00–Y89	Supplementary Classifications	733	195	156	324	416	745	962	699	482	401	374	290	311	269	447	5	6 809
	Total Males	15 912	8 941	6 054	7 231	8 344	8 086	7 353	6 533	5 987	6 268	6 850	6 384	6 717	6 322	12 246	206	119 434
	Rate/1 000 Males	292	149	107	130	155	147	151	164	177	188	221	262	319	357	502	N/A	196
	FEMALES																	
000–136	Infective and Parasitic	1 868	546	382	459	446	299	212	151	103	105	107	105	117	115	261	....	5 276
140–239	Neoplasms	114	90	76	171	242	286	332	310	336	432	404	407	441	409	997	1	5 048
240–279	Endocrine, Nutritional, Metabolic	231	31	35	60	69	102	110	110	93	135	139	121	127	131	329	1	1 824
280–289	Blood and Blood Forming Organs	55	66	57	42	41	32	29	39	26	49	25	29	26	35	132	....	683
290–315	Mental Disorders	115	29	39	194	270	294	282	314	239	246	213	167	177	141	292	....	3 012
320–389	Nervous System and Sense Organs	950	736	329	240	302	367	314	374	352	371	364	373	349	345	1 031	5	6 802
390–458	Circulatory System	33	36	62	103	153	346	426	483	498	572	634	648	776	906	2 699	6	8 381
460–519	Respiratory System	3 259	2 253	903	906	738	684	505	382	355	332	342	374	344	350	823	10	12 560
520–577	Digestive System	586	744	880	1 359	1 231	1 051	732	653	625	650	666	530	520	505	1 053	6	11 791
580–629	Genito-Urinary System	126	172	154	1 229	2 689	3 442	3 028	2 466	2 324	2 021	1 498	991	493	272	536	81	21 522
630–678	Pregnancy and Childbirth	....	....	34	3 060	9 434	9 437	4 056	1 144	244	20	2	....	....	....	....	2	27 433
680–709	Skin and Subcutaneous Tissue	333	255	285	380	327	246	231	210	185	188	187	186	185	195	404	5	3 802
710–738	Musculoskeletal System	81	106	218	430	406	513	534	570	633	536	600	546	527	475	923	5	7 103
740–759	Congenital Anomalies	374	158	152	113	84	75	57	48	24	20	28	14	18	13	19	....	1 197
760–779	Perinatal Morbidity	244	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	246
780–796	Symptoms and Ill-defined Conditions	1 113	691	638	905	1 105	937	692	707	652	567	550	458	525	467	1 374	14	1 404
N800–N999	Accidents, Poisoning and Violence	1 404	1 054	907	1 240	1 041	807	715	652	466	454	459	412	388	394	1 384	22	11 799
Y00–Y89	Supplementary Classifications	400	159	133	727	2 029	2 776	2 526	1 725	1 055	647	466	331	268	188	345	17	13 792
	Total including Pregnancy	11 236	7 126	5 284	11618	20 607	21 694	14 781	10 338	8 210	7 354	6 684	5 692	5 281	4 941	12 602	177	153 675
	Rate/1 000 Females	217	127	99	216	394	427	346	286	264	246	238	235	235	255	359	N/A	262
	Total Female excluding Pregnancy	11 236	7 126	5 250	8 558	11 173	12 257	10 725	9 194	7 966	7 334	6 682	5 692	5281	4 941	12 602	177	126 242
	Rate/1 000 Females	217	127	98	159	214	241	251	254	256	245	238	235	235	255	359	N/A	215
	Total All Persons	27 198	16 067	11 338	18 849	28 951	29 780	22 134	16 871	14 197	13 622	13 534	12 076	11 998	11 263	24 848	383	273 109
	Rate/1 000 Persons	256	138	103	172	272	281	242	222	218	215	230	249	276	304	418	N/A	228

N/A—Not Applicable

TABLE 6

AGE AND SEX SPECIFIC DISCHARGE RATES*—W.A. HOSPITALS 1971-1977

Year	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	N/S	Total
MALES																	
1971	276	145	101	108	127	123	122	134	145	159	180	216	270	320	451	N/A	171
1972	293	159	107	114	130	126	133	144	150	165	195	229	285	345	480	N/A	181
1973	302	156	105	120	136	125	132	149	159	167	202	236	286	352	480	N/A	185
1974	288	150	102	124	136	132	128	150	160	172	207	252	290	345	474	N/A	184
1975	289	154	107	129	150	136	145	154	172	184	205	260	293	365	487	N/A	191
1976	296	157	106	124	147	140	149	157	169	183	217	264	308	362	479	N/A	193
1977	292	149	107	130	155	147	151	164	177	188	221	262	319	357	502	N/A	196
FEMALES INCLUDING PREGNANCY																	
1971	209	123	86	217	420	447	319	241	189	183	187	179	200	226	321	N/A	236
1972	219	134	96	229	425	454	329	258	213	190	205	195	213	251	331	N/A	249
1973	232	131	93	231	415	435	333	266	218	204	213	207	228	264	338	N/A	253
1974	218	125	91	229	423	433	342	267	231	228	218	206	215	246	333	N/A	254
1975	218	126	96	230	416	435	345	273	253	238	240	215	233	251	342	N/A	260
1976	223	122	92	219	403	430	343	275	250	230	253	226	230	260	349	N/A	259
1977	217	127	99	216	394	427	346	286	264	246	238	235	235	255	359	N/A	262
FEMALES EXCLUDING PREGNANCY																	
1971	209	123	85	133	171	193	192	183	173	181	187	179	200	226	321	N/A	175
1972	212	134	95	145	190	222	217	208	197	189	205	195	213	251	331	N/A	191
1973	232	131	92	150	199	223	231	221	206	203	213	207	228	264	338	N/A	199
1974	218	125	90	153	209	227	242	228	220	227	218	206	215	246	333	N/A	201
1975	218	126	95	159	211	227	249	237	242	236	240	215	233	251	342	N/A	209
1976	223	122	91	155	209	240	250	244	241	228	253	226	230	260	349	N/A	210
1977	217	127	98	159	214	241	251	254	256	245	238	235	235	255	359	N/A	215
TOTAL ALL PERSONS																	
1971	243	135	93	161	265	272	216	185	166	170	183	197	235	273	375	N/A	203
1972	257	147	101	170	270	277	226	199	180	177	200	212	248	298	392	N/A	214
1973	268	144	99	174	270	269	227	205	187	185	207	221	257	307	397	N/A	218
1974	254	138	97	176	293	275	229	206	194	198	212	229	252	294	391	N/A	218
1975	254	140	102	179	279	278	239	211	211	209	222	237	262	306	403	N/A	225
1976	260	140	99	171	271	279	239	213	208	205	234	245	268	309	403	N/A	225
1977	256	138	103	172	272	281	242	222	218	215	230	249	276	304	418	N/A	228

* All rates per 1 000 population, based on Australian Bureau of Statistics data—Recomputed on the basis of revised population estimates (1971–76)
1977—Preliminary
N/A—Not Applicable

TABLE 7

BIRTH RATES AND RELATED HOSPITAL DISCHARGES, W.A., 1971-1977

Year	Total Births	Birth Rate* Per 1 000		Hospital Discharge Rate for pregnancy and childbirth (ICD 630–678) Per 1 000 Females Aged 15–44
		Mean Population	Females Aged 15–44	
1971	24 537	23·8	111·5	142·6
1972	22 435	21·3	99·7	134·5
1973	20 780	19·4	89·9	125·5
1974	20 481	18·7	85·5	122·1
1975	20 574	18·3	83·0	117·5
1976	20 912	17·9	82·8	110·5
1977	20 841	17·4	78·1	102·5

* (TOTAL BIRTHS):
all rates calculated from A.B.S. population data:
1971 and 1976 Actual Census
1972–75—Estimated, subject to 1976 Census revision
1977—Preliminary

TABLE 8

W.A. HOSPITALS 1977—AGE DISTRIBUTION OF ABORIGINES DISCHARGED BY SEX AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition	Age Groups															Not Stated	Total All Ages
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+		
	MALES																	
000–136	Infective and Parasitic	795	95	46	21	16	14	20	13	12	13	8	5	6	16	20	....	1 100
140–239	Neoplasms	4	....	....	....	2	....	2	2	4	2	1	3	1	1	6	....	28
240–279	Endocrine, Nutritional, Metabolic	53	....	3	2	7	4	4	5	10	12	17	5	10	5	9	2	148
280–289	Blood and Blood Forming Organs	22	4	2	1	1	2	2	....	3	1	....	1	....	....	2	....	41
290–315	Mental Disorders	2	4	3	5	33	38	45	33	30	19	18	2	5	8	4	3	252
320–389	Nervous System and Sense Organs	234	100	34	37	28	28	31	29	29	34	19	6	15	27	31	3	685
390–458	Circulatory System	6	2	9	5	10	12	17	16	26	31	34	26	37	17	21	2	271
460–519	Respiratory System	1 075	139	60	34	44	37	35	37	44	47	45	28	29	29	33	4	1 720
520–577	Digestive System	44	20	23	26	18	30	62	26	22	12	7	8	8	8	11	....	325
580–629	Genito-Urinary System	45	30	14	14	12	6	7	5	7	10	12	2	6	11	12		193
680–709	Skin and Subcutaneous Tissue	111	87	53	31	33	27	19	25	26	19	10	7	8	9	16	1	482
710–738	Musculoskeletal System	9	14	6	11	17	15	15	14	9	11	8	4	10	5	5	....	153
740–759	Congenital Anomalies	28	6	3	1	....	1	....	....	....	....	....	....	1	....	....	....	40
760–779	Perinatal Morbidity	28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	28
780–796	Symptoms and Illdefined Conditions	211	79	59	28	30	43	31	38	45	42	36	23	31	21	52	1	770
N800–N999	Accidents, Poisoning, Violence	188	148	104	134	165	142	136	115	107	74	49	34	25	28	32	14	1 495
Y00–Y89	Supplementary Classifications	89	11	9	11	9	12	11	1	7	7	11	5	10	....	5	2	200
	Male Total	2 944	739	428	361	425	411	437	359	381	334	275	159	202	185	259	32	7 931
	FEMALES																	
000–136	Infective and Parasitic	648	70	58	34	22	15	9	16	5	13	5	6	17	14	16	....	948
140–239	Neoplasms	1	7	2	1	4	3	5	7	3	9	3	7	7	....	3	....	62
240–279	Endocrine, Nutritional, Metabolic	36	4	3	3	3	7	11	17	18	26	20	12	15	13	6	....	194
280–289	Blood and Blood Forming Organs	7	7	1	7	6	5	1	3	1	4	2	1	1	1	....	....	47
290–315	Mental Disorders	7	....	3	21	11	25	15	27	17	13	3	4	1	3	5	....	155
320–389	Nervous System and Sense Organs	228	101	53	28	30	24	11	26	16	15	21	17	20	12	23	2	627
390–458	Circulatory System	7	7	22	16	13	19	19	13	33	21	28	15	21	14	33	2	283
460–519	Respiratory System	794	137	59	61	56	49	43	40	60	49	45	30	35	30	34	5	1 527
520–577	Digestive System	43	26	18	33	20	34	25	28	15	16	18	8	8	6	5	1	304
580–629	Genito-Urinary System	24	19	27	102	117	60	53	35	34	23	8	5	8	5	9	2	531
630–678	Pregnancy and Childbirth	....	....	14	447	397	218	106	49	9	2	....	....	....	....	....	....	1 242
680–709	Skin and Subcutaneous Tissue	128	72	43	30	18	29	28	24	18	21	8	10	17	4	14	3	467
710–738	Musculoskeletal System	8	7	19	12	20	15	6	13	11	5	5	9	9	9	6	2	156
740–759	Congenital Anomalies	15	3	3	....	....	....	....	2	2	....	....	....	....	....	....	....	25
760–779	Perinatal Morbidity	35	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	36
780–796	Symptoms and Illdefined Conditions	172	93	73	92	77	61	51	58	52	37	24	20	16	23	31	8	888
N800–N999	Accidents, Poisoning, Violence	142	95	62	132	161	124	102	128	86	64	50	17	33	10	20	4	1 230
Y00–Y89	Supplementary Classifications	73	8	23	128	138	79	62	39	19	14	8	3	8	3	7	10	622
	Female Total	2 368	656	483	1 147	1 093	767	547	525	399	332	248	164	216	147	212	40	9 344
	Grand Total—Male and Female	5 312	1 395	911	1 508	1 518	1 178	984	884	780	666	523	323	418	332	471	72	17 275

TABLE 9

W.A. HOSPITALS 1977—AGE DISTRIBUTION OF NON-ABORIGINES DISCHARGED BY SEX AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition	Age Groups																Total All Ages
		0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	Not Stated	
	MALES																	
000–136	Infective and Parasitic	1 577	553	328	235	348	297	181	122	105	110	93	86	92	76	176	2	4 381
140–239	Neoplasms	79	67	76	91	93	138	138	151	183	281	380	500	550	679	1 412	1	4 819
240–279	Endocrine, Nutritional, Metabolic	193	32	41	35	37	56	36	57	63	62	99	120	90	107	191	....	1 219
280–289	Blood and Blood Forming Organs	68	104	73	37	36	22	23	18	31	17	21	26	36	20	103	....	635
290–315	Mental Disorders	112	35	37	115	283	343	418	459	391	478	427	304	197	141	247	5	3 992
320–389	Nervous System and Sense Organs	873	840	314	219	289	330	339	306	276	352	354	369	380	385	768	3	6 397
390–458	Circulatory System	35	41	48	83	140	251	317	416	464	619	919	984	1 169	1 235	2 469	8	9 198
460–519	Respiratory System	3 893	2 516	878	575	588	531	416	339	287	330	367	441	534	566	1 410	7	13 678
520–577	Digestive System	853	757	780	773	834	851	803	711	692	784	836	755	755	655	1 807	10	11 936
580–629	Genito-Urinary System	504	285	178	191	381	464	353	458	469	263	593	502	751	521	990	92	6 995
680–709	Skin and Subcutaneous Tissue	286	219	257	377	377	326	260	219	184	207	230	207	178	187	296	2	3 812
710–738	Musculoskeletal System	118	140	189	442	681	774	763	770	660	646	626	546	477	397	499	4	7 732
740–759	Congenital Anomalies	522	317	178	90	49	42	34	22	18	14	14	17	14	21	24	....	1 376
760–779	Perinatal Morbidity	293	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	295
780–796	Symptoms and Ill-defined Conditions	1 202	656	514	406	522	506	549	499	486	612	584	525	541	535	1 226	7	9 370
N800–N999	Accidents, Poisoning, Violence	1 716	1 456	1 588	2 888	2 854	2 011	1 335	929	822	765	669	558	450	343	647	28	19 059
Y00–Y89	Supplementary Classifications	644	184	147	313	407	733	951	698	475	394	363	285	301	269	442	3	6 609
	Male Total	12 968	8 202	5 626	6 870	7 919	7 675	6 916	6 174	5 606	5 934	6 575	6 225	6 515	6 137	11 987	174	111 503
	FEMALES																	
000–136	Infective and Parasitic	1 220	476	324	425	424	284	203	135	98	92	102	99	100	101	245	....	4 328
140–239	Neoplasms	113	83	74	170	238	283	327	303	333	423	401	400	434	409	994	1	4 986
240–279	Endocrine, Nutritional, Metabolic	195	27	32	57	66	95	99	93	75	109	119	109	112	118	323	1	1 630
280–289	Blood and Blood Forming Organs	48	59	56	35	35	27	28	36	25	45	23	28	25	34	132	....	636
290–315	Mental Disorders	108	29	36	173	259	269	267	287	222	233	210	163	176	138	287	....	2 857
320–389	Nervous System and Sense Organs	722	635	276	212	272	343	303	348	336	356	343	356	329	333	1 008	3	6 175
390–458	Circulatory System	26	29	40	87	140	327	407	470	465	551	606	633	755	892	2 666	4	8 098
460–519	Respiratory System	2 465	2 116	844	845	682	635	462	342	295	283	297	344	309	320	789	5	11 033
520–577	Digestive System	543	718	862	1 326	1 211	1 017	707	625	610	634	648	522	512	499	1 048	5	11 487
580–629	Genito-Urinary System	102	153	127	1 127	2 572	3 382	2 975	2 431	2 290	1 998	1 490	986	485	267	527	79	20 991
630–678	Pregnancy and Childbirth	....	....	20	2 613	9 037	9 219	3 950	1 095	235	18	2	....	....	....	....	2	26 191
680–709	Skin and Subcutaneous Tissue	205	183	242	350	309	217	203	186	167	167	179	176	168	191	390	2	3 335
710–738	Musculoskeletal System	73	99	199	418	386	498	528	557	622	531	595	537	518	466	917	3	6 947
740–759	Congenital Anomalies	359	155	149	113	84	75	57	46	22	20	28	14	18	13	19	....	1 172
760–779	Perinatal Morbidity	209	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	210
780–796	Symptoms and Ill-defined Conditions	941	598	565	813	1 028	876	641	649	600	539	526	438	509	444	1 343	6	10 516
N800–N999	Accidents, Poisoning, Violence	1 262	959	845	1 108	880	683	613	524	380	390	409	395	355	384	1 364	18	10 569
Y00–Y89	Supplementary Classifications	327	151	110	599	1 891	2 697	2 464	1 686	1 036	633	458	328	260	185	338	7	13 170
	Female Total	8 918	6 470	4 801	10 471	19 514	20 927	14 234	9 813	7 811	7 022	6 436	5 528	5 065	4 794	12 390	137	144 331
	Grand Total, Male and Female	21 886	14 672	10 427	17 341	27 433	28 602	21 150	15 987	13 417	12 956	13 011	11 753	11 580	10 931	24 377	311	255 834

TABLE 10

W.A. HOSPITALS 1977—PATIENTS DISCHARGED BY RACE AND PRINCIPAL CONDITION

I.C.D. Categories	Principal Condition Groups	Discharges					Days in Hospital					Average Number of Days in Hospital			% of Total Bed Days		
		Aboriginal		Non-Aboriginal		Total	Aboriginal		Non-Aboriginal		Total	Abor-iginal	Non-Abor-iginal	Total	Abor-iginal	Non-Abor-iginal	Total
		Number	% for Group	Number	% for Group		Number	% for Group	Number	% for Group							
000–136	Infective and Parasitic	2 048	19·0	8 709	81·0	10 757	22 648	32·7	46 666	67·3	69 314	11·1	5·4	6·4	1·12	2·31	3·43
140–239	Neoplasms	90	0·9	9 805	99·1	9 895	1 116	0·9	119 447	99·1	120 563	12·4	12·2	12·2	0·06	5·91	5·97
240–279	Endocrine, Nutritional, Metabolic	342	10·7	2 849	89·3	3 191	3 804	9·9	34 483	90·1	38 287	11·1	12·1	12·0	0·19	1·71	1·90
280–289	Blood and Blood Forming Organs	88	6·5	1 271	93·5	1 359	810	8·7	8 548	91·3	9 358	9·2	6·7	6·9	0·04	0·42	0·46
290–315	Mental Disorders	407	5·6	6 849	94·4	7 256	3 235	3·4	92 654	96·6	95 889	7·9	13·5	13·2	0·16	4·59	4·75
320–389	Nervous System and Sense Organs	1 312	9·4	12 572	90·6	13 884	13 000	12·0	95 080	88·0	108 080	9·9	7·6	7·8	0·64	4·71	5·35
390–458	Circulatory System	554	3·1	17 296	96·9	17 850	9 035	3·6	240 045	96·4	249 080	16·3	13·9	14·0	0·45	11·89	12·33
460–519	Respiratory System	3 247	11·6	24 711	88·4	27 958	24 736	15·7	132 958	84·3	157 694	7·6	5·4	5·6	1·22	6·58	7·81
520–577	Digestive System	629	2·6	23 423	97·4	24 052	5 230	3·1	161 174	96·9	166 404	8·3	6·9	6·9	0·26	7·98	8·24
580–629	Genito-Urinary System	724	2·5	27 986	97·5	28 710	5 073	3·6	136 677	96·4	141 750	7·0	4·9	4·9	0·25	6·77	7·02
630–678	Pregnancy and Childbirth	1 242	4·5	26 191	95·5	27 433	11 607	5·9	183 548	94·1	195 155	9·3	7·0	7·1	0·57	9·09	9·66
680–709	Skin and Subcutaneous Tissue	949	11·7	7 147	88·3	8 096	7 730	13·7	48 652	86·3	56 382	8·1	6·8	7·0	0·38	2·41	2·79
710–738	Musculoskeletal System	309	2·1	14 679	97·9	14 988	3 387	2·5	131 913	97·5	135 300	11·0	9·0	9·0	0·17	6·53	6·70
740–759	Congenital Anomalies	65	2·5	2 548	97·5	2 613	955	5·6	15 957	94·4	16 912	14·7	6·3	6·5	0·05	0·79	0·84
760–779	Perinatal Morbidity	64	11·2	505	88·8	569	1 429	20·4	5 570	79·6	6 999	22·3	11·0	12·3	0·07	0·28	0·35
780–796	Symptoms and Illdefined Conditions	1 658	7·7	19 886	92·3	21 544	14 863	9·3	144 309	90·7	159 172	9·0	7·3	7·4	0·74	7·15	7·88
N800–N999	Accidents, Poisoning, Violence	2 725	8·4	29 628	91·6	32 353	20 379	9·3	198 312	90·7	218 691	7·5	6·7	6·8	1·01	9·82	10·83
Y00–Y89	Supplementary Classifications	822	4·0	19 779	96·0	20 601	5 013	6·7	69 482	93·3	74 495	6·1	3·5	3·6	0·25	3·44	3·69
	Total	17 275	6·3	255 834	93·7	273 109	154 050	7·6	1 865 475	92·4	2 019 525	8·9	7·3	7·4	7·63	92·37	100·00

TABLE 11

W.A. HOSPITALS 1977—PATIENTS DISCHARGED BY PRINCIPAL CONDITION AND TYPE OF HOSPITAL

I.C.D. Categories	Principal Condition Groups	Discharges							Days in Hospital							Average Number of Days in Hospital				Percentage of Total Bed Days			
		Teaching		Private		Other Govt. and Board		All Hospitals	Teaching		Private		Other Govt. and Board		All Hospitals	Teaching	Private	Other Govt. and Board	All Hospitals	Teaching	Private	Other Govt. and Board	All Hospitals
		No.	% for Group	No.	% for Group	No.	% for Group		No.	% for Group	No.	% for Group	No.	% for Group									
000–136	Infective and Parasitic	2 895	26·91	829	7·71	7 033	65·38	10 757	26 156	37·74	3 397	4·90	39 761	57·36	69 314	9·0	4·1	5·7	6·4	1·30	0·17	1·97	3·43
140–239	Neoplasms	5 176	52·31	1 730	17·48	2 989	30·21	9 895	67 720	56·17	18 814	15·61	34 029	28·23	120 563	13·1	10·9	11·4	12·2	3·35	0·93	1·69	5·97
240–279	Endocrine, Nutritional, Metabolic	1 169	36·63	332	10·40	1 690	52·96	3 191	13 349	34·87	6 180	16·14	18 758	48·99	38 287	11·4	18·6	11·1	12·0	0·66	0·31	0·93	1·90
280–289	Blood and Blood Forming Organs	552	40·62	160	11·77	647	47·61	1 359	3 449	36·86	1 229	13·13	4 680	50·01	9 358	6·2	7·7	7·2	6·9	0·17	0·06	0·23	0·46
290–315	Mental Disorders	2 417	33·31	862	11·88	3 977	54·81	7 256	35 756	37·29	18 431	19·22	41 702	43·49	95 889	14·8	21·4	10·5	13·2	1·77	0·91	2·06	4·75
320–389	Nervous System and Sense Organs	4 945	35·62	4 035	29·06	4 904	35·32	13 884	41 749	38·63	16 027	14·83	50 304	46·54	108 080	8·4	4·0	10·3	7·8	2·07	0·79	2·49	5·35
390–458	Circulatory System	7 324	41·03	2 376	13·31	8 150	45·66	17 850	105 867	42·50	30 344	12·18	112 869	45·31	249 080	14·5	12·8	13·8	14·0	5·24	1·50	5·59	12·33
460–519	Respiratory System	7 578	27·10	5 000	17·88	15 380	55·01	27 958	42 544	26·98	21 898	13·89	93 252	59·19	157 694	5·6	4·4	6·1	5·6	2·11	1·08	4·62	7·81
520–577	Digestive System	6 863	28·53	5 719	23·78	11 470	47·69	24 052	55 053	33·08	37 033	22·25	74 318	44·66	166 404	8·0	6·5	6·5	6·9	2·73	1·83	3·68	8·24
580–629	Genito-Urinary System	9 201	32·05	7 051	24·56	12 458	43·39	28 710	38 034	26·83	40 922	28·87	62 794	44·30	141 750	4·1	5·8	5·0	4·9	1·88	2·03	3·11	7·02
630–678	Pregnancy and Childbirth	5 645	20·58	6 560	23·91	15 228	55·51	27 433	40 161	20·58	50 794	26·03	104 200	53·39	195 155	7·1	7·7	6·8	7·9	1·99	2·52	5·16	9·66
680–709	Skin and Subcutaneous Tissue	1 320	16·30	1 928	23·81	4 848	59·88	8 096	12 669	22·47	9 988	17·71	33 725	59·82	56 382	9·6	5·2	7·0	7·0	0·63	0·49	1·67	2·79
710–738	Musculoskeletal System	4 240	28·29	5 165	34·46	5 583	37·25	14 998	54 214	40·07	31 490	23·27	49 596	36·66	135 300	12·8	6·1	8·9	9·0	2·68	1·56	2·46	6·70
740–759	Congenital Anomalies	1 615	61·81	487	18·64	511	19·56	2 613	12 646	74·78	1 849	10·93	2 417	14·29	16 912	7·8	3·8	4·7	6·5	0·63	0·09	0·12	0·84
760–779	Perinatal Morbidity	231	40·60	99	17·40	239	42·00	569	2 900	41·43	1 152	16·46	2 497	42·11	6 999	12·6	11·6	12·3	12·3	0·14	0·06	0·15	0·35
780–796	Symptoms and Ill-defined Conditions	5 702	26·47	2 304	10·69	13 538	62·84	21 544	29 262	18·38	27 761	17·44	102 149	64·18	159 172	5·1	12·0	7·5	7·4	1·45	1·37	5·06	7·88
N800–N999	Accidents, Poisoning, Violence	15 058	46·54	1 702	5·26	15 593	48·20	32 353	127 801	58·44	11 472	5·25	79 418	36·32	218 691	8·5	6·7	5·1	6·8	6·53	0·57	3·93	10·83
Y00–Y89	Supplementary Classifications	3 268	15·86	7 242	35·15	10 091	48·98	20 601	16 861	22·63	24 139	32·40	33 495	44·96	74 495	5·2	3·3	3·3	3·6	0·83	1·20	1·66	3·69
	Total	85 199	31·20	53 581	19·62	134 329	49·19	273 109	726 191	35·96	352 920	17·48	940 414	46·57	2019525	8·5	6·6	7·0	7·4	35·96	17·48	46·57	100·00

TABLE 12

W.A. HOSPITALS 1977—PATIENTS DISCHARGED BY PRINCIPAL CONDITION AND TYPE OF HOSPITAL

I.C.D. Categories	Principal Condition Groups	Discharges														State Total
		Metropolitan								Country						
		Teaching		Government		Private		Total		Govt. and Board		Private		Total		
		No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	No.	% for Group	
000–136	Infective and Parasitic	2 895	26·91	1 197	11·13	602	5·60	4 694	43·64	5 836	54·25	227	2·11	6 063	56·36	10 757
140–239	Neoplasms	5 176	52·31	1 956	19·77	1 611	16·28	8 743	88·36	1 033	10·44	119	1·20	1 152	11·64	9 895
240–279	Endocrine, Nutritional, Metabolic	1 169	36·63	481	15·07	285	8·93	1 935	60·64	1 209	37·89	47	1·47	1 256	39·36	3 191
280–289	Blood and Blood Forming Organs	552	40·62	165	12·14	145	10·67	862	63·43	482	35·47	15	1·10	497	36·57	1 359
290–315	Mental Disorders	2 417	33·31	2 332	32·14	808	11·14	5 557	76·58	1 645	22·67	54	0·74	1 699	23·42	7 256
320–389	Nervous System and Sense Organs	4 945	35·62	1 818	13·09	3 924	28·26	10 687	76·97	3 086	22·23	111	0·80	3 197	23·03	13 884
390–458	Circulatory System	7 324	41·03	3 105	17·39	2 074	11·62	12 503	70·04	5 045	28·26	302	1·69	5 347	29·96	17 850
460–519	Respiratory System	7 578	27·10	3 588	12·83	4 537	16·23	15 703	56·17	11 792	42·18	463	1·66	12 255	43·83	27 958
520–577	Digestive System	6 863	28·53	5 336	22·19	5 117	21·27	17 316	71·99	6 134	25·50	602	2·50	6 736	28·01	24 052
580–629	Genito-Urinary System	9 201	32·05	6 878	23·96	6 534	22·76	22 613	78·76	5 580	19·44	517	1·80	6 097	21·24	28 710
630–678	Pregnancy and Childbirth	5 645	20·58	7 662	27·93	6 071	22·13	19 378	70·64	7 566	27·58	489	1·78	8 055	29·36	27 433
680–709	Skin and Subcutaneous Tissue	1 320	16·30	1 791	22·12	1 810	22·36	4 921	60·78	3 057	37·76	118	1·46	3 175	39·22	8 096
710–738	Musculoskeletal System	4 240	28·29	2 940	19·62	4 987	33·27	12 167	81·18	2 643	17·63	178	1·19	2 821	18·82	14 988
740–759	Congenital Anomalies	1 615	61·81	317	12·13	462	17·68	2 394	91·62	194	7·42	25	0·96	219	8·38	2 613
760–779	Perinatal Morbidity	231	40·60	73	12·83	92	16·17	396	69·60	166	29·17	7	1·23	173	30·40	569
780–796	Symptoms and Ill-defined Conditions	5 702	26·47	2 787	12·94	1 798	8·35	10 287	47·75	10 751	49·90	506	2·35	11 257	52·25	21 544
N800–N999	Accidents, Poisoning, Violence	15 058	46·54	2 515	7·77	1 368	4·23	18 941	58·54	13 078	40·42	334	1·03	13 412	41·46	32 353
Y00–Y89	Supplementary Classifications	3 268	15·86	5 423	26·32	6 896	33·47	15 587	75·66	4 668	22·66	346	1·68	5 014	24·34	20 601
	Total	85 199	31·20	50 364	18·44	49 121	17·99	184 684	67·62	83 965	30·74	4 460	1·63	88 425	32·38	273 109

TABLE 13

W.A. HOSPITALS—OPERATION CASES DISCHARGED DURING 1977

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent Operation Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths* per 1 000 Separations
Sec. I													
001–019	Skull, Brain and Cerebral Meninges	280	164	7 984	4 743	28·5	28·9	0·9	0·5	373	37	34	76
020–029	Spine and Spinal Cord	2 198	1 490	17 642	12 918	8·0	8·7	1·9	1·4	3 599	76	13	3
030–035	Cranial Nerves	37	28	333	124	9·0	4·4	0·0	0·0	64	1	....	....
036–039	Autonomic Nervous System (Sympathetic and Parasympathetic)	252	217	4 023	3 312	16·0	15·3	0·4	0·4	459	5	5	10
040–049	Peripheral Nerves	461	630	2 225	3 034	4·8	4·8	0·2	0·3	1 088	3	....	....
Sec. II													
061–063	Pituitary	2	12	44	368	22·0	30·7	0·0	0·0	13	....	1	71
065–069	Adrenal	2	12	90	245	45·0	20·4	0·0	0·0	13	....	1	71
071–076	Thyroid and Parathyroid	41	246	341	2 080	8·3	8·5	0·0	0·2	286	....	1	3
077–079	Thymus and Carotid Body	2	....	47	....	23·5	....	0·0	....	2	....	....	....
080–089	Surgery of Neck	240	224	2 807	2 145	11·7	9·6	0·3	0·2	442	4	18	38
Sec. III													
100–109	Orbit and Globe	53	32	599	291	11·3	9·1	0·1	0·0	85	....	....	....
110–115	Eye Muscles of Globe	293	374	1 092	1 357	3·7	3·6	0·1	0·1	666	1	....	....
117–129	Eyelids	475	562	2 385	2 324	5·0	4·1	0·3	0·3	1 028	7	2	1
132–139	Conjunctiva	545	307	1 343	731	2·5	2·4	0·1	0·1	852	....	....	....
140–149	Cornea	132	64	1 387	810	10·5	12·7	0·2	0·1	192	4	....	....
150–159	Iris and Ciliary Body	120	133	1 083	1 318	9·0	9·9	0·1	0·1	251	2	....	....
160–169	Sclera, Choroid, Retina and Vitreous	177	90	1 569	737	8·9	8·2	0·2	0·1	264	3	....	....
170–179	Lens	526	671	5 735	7 012	10·9	10·5	0·6	0·8	1 182	14	1	....
180–189	Lacrimal Apparatus	178	188	755	521	4·2	2·8	0·1	0·1	363	3	....	....
Sec. IV													
190–209	Ear	1 736	1 356	5 012	3 991	2·9	2·9	0·5	0·4	3 065	27	....	....
210–224	Nose	2 167	1 502	7 611	6 232	3·5	4·1	0·8	0·7	3 664	4	1	....
225–229	Accessory Air Sinuses and Other Parts of Face	112	100	940	460	8·4	4·6	0·1	0·1	212	....	....	....
230–239	Naso-pharynx	2 244	2 814	6 607	8 614	2·9	3·1	0·7	0·9	5 048	8	2	....
240–249	Larynx and Trachea	361	215	4 459	1 900	12·4	8·8	0·5	0·2	547	12	17	29
Sec. V													
250–259	Teeth and Jaws	2 073	2 674	6 074	6 362	2·9	2·4	0·7	0·7	4 708	37	2	....
260–267	Tongue and Mouth	300	194	1 288	956	4·3	4·9	0·1	0·1	489	5	....	....
270–273	Salivary Glands (Parotid, Sublingual, Submandibular Glands)	95	81	616	451	6·5	5·6	0·1	0·0	175	1	....	....
280–283	Pharynx	25	19	235	201	9·4	10·6	0·0	0·0	42	1	1	22
290–299	Oesophagus	410	371	2 658	1 812	6·5	4·9	0·3	0·2	762	11	8	10

TABLE 13—*continued*

W.A. HOSPITALS—OPERATION CASES DISCHARGED DURING 1977

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent Operation Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Discharged	Transferred	Died	Deaths* per 1 000 Separations
Sec. VI													
300–309	Heart	496	294	5 993	3 236	12·1	11·0	0·7	0·4	735	35	20	25
320–329	Intra Thoracic Vessels	47	36	571	339	12·1	9·4	0·1	0·0	73	6	4	48
330–339	Thoracic Cage	214	147	3 779	2 555	17·7	17·4	0·4	0·3	323	13	25	69
340–349	Lung and Bronchus	293	139	4 920	1 689	16·8	12·2	0·5	0·2	413	11	8	18
Sec. VII													
380–389	Breast	128	2 987	800	17 638	6·3	5·9	0·1	1·9	3 102	12	1	....
Sec. VIII													
400–409	Abdominal Wall	354	1 431	6 437	12 224	18·2	8·5	0·7	1·3	1 708	18	59	33
410–419	Hernia	2 366	675	17 902	5 512	7·6	8·2	1·9	0·6	3 020	15	6	1
420–439	Stomach	1 375	821	11 701	6 320	8·5	7·7	1·3	0·7	2 128	29	39	17
440–445	Appendix	1 804	2 293	11 800	14 559	6·5	6·3	1·3	1·6	4 071	26	....	....
446	Other Diverticulae	6	5	75	52	12·5	10·4	0·0	0·0	11	....	....	....
450–469	Small Intestine—Colon	699	800	9 179	9 424	13·1	11·8	1·0	1·0	1 424	25	50	33
470–479	Rectum	166	187	3 205	3 026	19·3	16·2	0·3	0·3	342	5	6	16
480–499	Anus	1 770	1 198	14 090	9 113	8·0	7·6	1·5	1·0	2 954	10	4	1
500–509	Liver	125	71	1 580	917	12·6	12·9	0·2	0·1	189	3	4	20
510–519	Bile Ducts	23	73	503	1 029	21·9	14·1	0·1	0·1	92	2	2	20
520–529	Gall Bladder	509	1 531	7 307	19 357	14·4	12·6	0·8	2·1	2 007	21	12	5
530–539	Pancreas	45	43	661	209	14·7	4·9	0·1	0·0	83	4	1	11
540–549	Spleen and Abdominal Venous System	55	37	923	713	16·8	19·3	0·1	0·1	86	2	4	43
550–559	Abdominal Structures, N.E.C.	99	32	1 716	604	17·3	18·9	0·2	0·1	105	4	22	167
Sec. IX													
560–579	Kidney	282	236	3 663	3 064	13·0	13·0	0·4	0·3	500	11	7	13
580–589	Ureter	221	176	2 195	1 945	9·9	11·1	0·2	0·2	390	4	3	7
600–619	Urinary Bladder	2 644	1 981	12 084	7 799	4·6	3·9	1·3	0·8	4 589	24	12	2
620–629	Urethra	413	146	2 253	846	5·5	5·8	0·2	0·1	558	....	1	1
630–637	Prostate	1 081	....	17 219	....	15·9	....	1·9	....	1 048	22	11	10
639	Seminal Vesicles	1	....	22	....	22·0	....	0·0	....	1	....	....	....
640–669	Testis, Epididymis, and Scrotum	4 005	....	11 230	....	2·8	....	1·2	....	3 994	11	....	....
Sec. X													
671–679	Ovary	....	590	....	5 489	....	9·3	....	0·6	588	2	....	....
681–689	Oviduct (Fallopian Tube)	....	5 768	....	22 969	....	4·0	....	2·5	5 750	17	1	....
690–709	Uterus (Hysterectomy)	....	14 866	....	59 603	....	4·0	....	6·5	14 829	33	4	....
710–729	Vagina	....	724	....	6 710	....	9·3	....	0·7	722	2	....	....
730–739	Introitus, Vulva, Labia and Perineum	....	508	....	1 689	....	3·3	....	0·2	507	1	....	....

TABLE 13—*continued*

W.A. HOSPITALS—OPERATION CASES DISCHARGED DURING 1977

Code of Surgical Procedures	Operation Group	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per cent Operation Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths per 1 000 Separations
Sec. XI													
740–750	Ante-Natal Obstetric Operations	....	2 074	....	7 495	....	3·6	....	0·8	2 069	5	....	....
751–769	Delivery Obstetric Operations	....	7 437	....	70 836	....	9·5	....	7·7	7 377	60	....	....
770–779	Post-Natal or Post-Abortion Obstetric Operations	....	1 778	....	7 195	....	4·0	....	0·8	1 765	13	....	....
Sec. XII													
780–788	Treatment of Fractures	3 750	2 421	36 509	30 731	9·7	12·7	4·0	3·3	5 786	345	40	6
790–799	Bone	767	786	9 601	9 884	12·5	12·6	1·0	1·1	1 538	10	5	3
800–822	Joints	3 303	2 869	25 541	27 809	7·7	9·7	2·8	3·0	6 081	77	14	2
825–826	Capsule and Ligaments of Joints	112	44	885	557	7·9	12·7	0·1	0·1	155	1	....	....
827–828	Bursae	93	28	577	321	6·2	11·5	0·1	0·0	117	3	1	8
830–839	Muscles	98	57	979	480	10·0	8·4	0·1	0·1	154	1	....	....
840–852	Tendon	862	734	3 824	3 157	4·4	4·3	0·4	0·3	1 580	16	....	....
854–859	Fascia	218	58	1 075	304	4·9	5·2	0·1	0·0	276	....	....	....
860–879	Amputation and Other Operations on Limbs	416	159	8 294	4 120	19·9	25·9	0·9	0·4	546	21	8	13
Sec. XIII													
880–889	Arteries	347	230	3 492	1 834	10·1	8·0	0·4	0·2	555	10	12	20
890–898	Veins	494	1 433	4 569	12 090	9·2	8·4	0·5	1·3	1 909	15	3	1
900–909	Lymphatics	130	108	1 188	930	9·1	8·6	0·1	0·1	235	2	1	4
Sec. XIV													
910–929	Skin and Subcutaneous Tissue	6 090	5 148	29 224	24 594	4·8	4·8	3·2	2·7	11 179	51	8	....
930–939	Plastic Operations	1 039	720	9 561	8 234	9·2	11·4	1·0	0·9	1 744	14	1	....
Sec. XV													
940–950	Injection for General Action	2 608	2 711	6 892	5 959	2·6	2·2	0·7	0·6	5 246	23	50	9
952–959	Operations with Site Unspecified	40	41	467	409	11·7	10·0	0·1	0·0	79	2	....	....
960–969	Non-Operative Procedures	759	665	5 047	5 404	6·6	8·1	0·5	0·6	1 399	19	6	4
970–979	Anaesthetic Procedures	86	166	267	672	3·1	4·0	0·0	0·1	252	....	....	....
980–999	Diagnostic Radiographic Techniques	455	527	7 805	8 654	17·2	16·4	0·8	0·9	858	63	61	62
	Total	56 425	82 759	394 589	525 348	7·0	6·3	42·9	57·1				
	Grand Total, Male and Female	139 184		919 937		6·6		100·0		137 176	1 385	623	4

* Figures truncated to whole numbers.

TABLE 14

W.A. HOSPITALS 1977—AGE DISTRIBUTION OF OPERATION CASES BY SEX AND OPERATION

Code of Surgical Procedures	Operation Group	Five Year Age Group																Total All Ages
	MALES	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	Not Stated	
001–049	Nervous System	59	36	21	95	192	280	351	370	333	338	324	280	208	168	169	4	3 228
061–089	Endocrine, System	28	20	11	14	12	29	17	25	23	21	21	20	22	11	13	....	287
100–189	Eye	300	169	94	94	117	120	124	85	115	150	161	166	170	175	457	2	2 499
190–249	Ear, Nose and Throat	734	1 785	647	518	515	454	384	278	194	247	199	199	169	126	169	2	6 620
250–299	Upper Alimentary Tract	360	372	204	281	306	239	168	150	126	134	141	111	86	79	145	1	2 903
300–349	Thorax	82	22	13	42	52	31	39	44	58	60	102	151	114	105	135	....	1 050
380–389	Breast	2	....	7	21	18	16	8	10	2	9	8	4	8	7	8	....	128
400–559	Abdomen	506	336	541	537	661	723	676	618	627	705	746	657	683	559	816	5	9 396
560–669	Urinary and Male Genital Organs	861	426	240	188	332	704	874	656	447	367	456	472	550	695	1 377	2	8 647
780–879	Orthopaedic	269	548	679	1 219	1 307	1 104	784	643	561	482	460	431	387	324	412	9	9 619
880–909	Peripheral Circulation	5	7	6	35	56	48	54	74	94	69	119	119	108	95	81	1	971
910–939	Skin and Subcutaneous Tissue	471	610	617	772	732	582	494	403	358	389	363	307	281	282	465	3	7 129
940–999	Other Surgical Procedures	151	135	78	127	260	329	242	364	403	177	423	301	501	120	243	94	3 948
Males	Total	3 828	4 466	3 158	3 943	4 560	4 659	4 215	3 720	3 341	3 148	3 523	3 218	3 287	2 746	4 490	123	56 425
	Rate/1 000 Males	70	75	56	71	85	85	87	94	99	94	114	132	156	155	184	N/A	93
	FEMALES																	
001–049	Nervous System	50	18	24	64	128	189	240	267	314	273	248	215	164	113	221	1	2 529
061–089	Endocrine System	33	16	12	22	40	44	51	51	42	50	44	33	19	18	19	....	494
100–189	Eye	294	151	76	62	71	78	88	105	114	127	126	148	169	176	633	3	2 421
190–249	Ear, Nose and Throat	541	1 689	661	717	486	449	313	259	184	142	135	139	85	88	97	2	5 987
250–299	Upper Alimentary Tract	289	397	291	522	519	281	184	144	90	118	122	106	85	69	121	1	3 339
300–349	Thorax	75	27	17	39	22	31	14	22	36	41	40	58	62	55	76	1	616
380–389	Breast	4	1	16	126	283	445	494	404	362	297	200	114	85	56	100	....	2 987
400–559	Abdomen	205	281	548	875	960	975	735	679	625	593	605	495	482	429	715	4	9 197
560–669	Urinary and Male Genital Organs	40	79	45	95	156	155	204	222	221	222	201	235	175	141	347	1	2 539
671–739	Female Genital Tract	10	21	30	927	3 203	4 843	4 479	3 178	2 144	1 628	969	407	253	148	213	3	22 456
740–779	Obstetric	....	....	23	1 411	3 593	3 761	1 751	580	157	12	1	....	....	....	....	....	11 289
780–879	Orthopaedic	223	458	473	525	431	455	417	411	398	396	495	461	457	455	1 092	9	7 156
880–909	Peripheral Circulation	9	10	14	28	50	159	242	236	238	199	165	132	112	88	89	....	1 771
910–939	Skin and Subcutaneous Tissue	353	486	551	650	504	451	409	350	310	335	333	270	229	221	416	....	5 868
940–999	Other Surgical Procedures	142	64	87	219	125	169	114	250	514	537	552	576	232	128	324	77	4 110
Females	Total, including Obstetrics	2 268	3 698	2 868	6 282	10 571	12 485	9 735	7 158	5 749	4 970	4 236	3 389	2 609	2 176	4 463	102	82 759
	Rate/1 000 Females	44	66	54	117	202	245	228	198	185	166	151	140	116	112	127	N/A	141
Females	Total, excluding obstetrics	2 268	3 696	2 845	4 871	6 978	8 724	7 984	6 578	5 592	4 958	4 235	3 389	2 609	2 176	4 463	102	71 470
	Rate/1 000 Females	44	66	53	91	133	172	187	182	180	166	151	140	116	112	127	N/A	122
All Persons	Total	6 096	8 164	6 026	10 225	15 131	17 144	13 950	10 878	9 090	8 118	7 759	6 607	5 896	4 922	8 953	225	139 184
	Rate/1 000 Persons	57	70	55	94	142	162	153	143	140	128	132	136	135	133	151	N/A	116

* N/A = Not Applicable.

TABLE 15
AGE AND SEX SPECIFIC OPERATION RATES*—W.A. HOSPITALS 1971-1977

Year	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70+	N/S	Total
MALES																	
1971	61	73	52	57	66	65	66	75	80	81	84	98	120	131	150	N/A	75
1972	65	77	53	59	67	68	77	83	83	84	94	106	123	145	167	N/A	80
1973	65	76	53	62	71	70	75	85	90	86	97	109	122	144	169	N/A	82
1974	68	75	51	65	72	76	74	83	93	87	101	116	126	141	171	N/A	83
1975	71	76	52	69	82	76	83	84	97	95	100	126	126	155	173	N/A	87
1976	67	75	55	67	79	81	86	90	91	97	112	131	147	156	179	N/A	90
1977	70	75	56	71	85	85	87	94	99	94	114	132	156	155	184	N/A	93
FEMALES INCLUDING OBSTETRIC																	
1971	37	65	47	101	170	198	171	145	120	113	105	86	91	92	102	N/A	106
1972	39	70	51	110	187	228	189	160	137	118	116	100	93	106	112	N/A	118
1973	40	66	47	107	179	215	193	166	136	127	122	101	98	111	112	N/A	118
1974	44	65	49	113	189	215	205	170	151	147	127	107	99	105	112	N/A	124
1975	43	64	52	118	194	229	212	178	178	155	152	117	112	111	120	N/A	132
1976	44	61	50	117	203	248	221	189	173	152	169	125	113	117	123	N/A	137
1977	44	66	54	117	202	245	228	198	185	166	151	140	116	112	127	N/A	141
FEMALES EXCLUDING OBSTETRIC																	
1971	37	65	46	75	107	133	134	127	114	112	105	86	91	92	102	N/A	90
1972	39	70	50	77	116	154	151	143	130	117	116	100	93	106	112	N/A	99
1973	40	66	47	78	119	151	162	151	132	126	122	101	98	111	112	N/A	101
1974	44	65	49	85	131	158	175	156	147	147	127	107	99	105	112	N/A	108
1975	43	64	52	91	132	167	177	164	173	140	152	117	112	111	120	N/A	115
1976	44	61	50	86	129	171	181	174	168	151	169	125	113	117	123	N/A	117
1977	44	66	53	91	133	172	187	182	180	166	151	140	116	112	127	N/A	122
TOTAL ALL PERSONS																	
1971	50	69	49	78	115	126	116	108	99	96	94	92	106	111	122	N/A	90
1972	53	74	53	84	124	142	130	120	109	100	105	103	108	125	134	N/A	99
1973	53	71	50	84	123	138	131	124	112	105	109	105	110	128	135	N/A	99
1974	56	70	50	89	128	141	136	125	120	115	114	112	112	122	136	N/A	103
1975	58	70	52	93	136	148	143	130	136	124	125	122	119	132	142	N/A	109
1976	56	68	52	91	139	161	149	137	132	123	139	128	129	135	146	N/A	113
1977	57	70	55	94	142	162	153	143	140	128	132	136	135	133	151	N/A	116

* All Rates per 1 000 population, based on Australian Bureau of Statistics Data—Recomputed on the basis of revised population estimates (1971–76).
1977—Preliminary N/A—Not Applicable

TABLE 16

W.A. HOSPITALS 1977—PATIENTS DISCHARGED BY OPERATION GROUP AND TYPE OF HOSPITAL

Code of Surgical Procedures	Operation Groups	Discharges							Days in Hospital							Average Number of Days in Hospital				Percentage of Total Bed Days			
		Teaching		Private		Other Govt. and Board		All Hos-pitals	Teaching		Private		Other Govt. and Board		All Hos-pitals	Teach-ing	Priv-ate	Other Govt. and Board	All Hos-pitals	Teach-ing	Priv-ate	Other Govt. and Board	All Hos-pitals
		No.	% for Group	No.	% for Group	No.	% for Group		No.	% for Group	No.	% for Group	No.	% for Group									
001–049	Nervous System	2 684	46·62	1 752	30·43	1 321	22·95	5 757	37 038	65·74	11 249	19·97	8 051	14·29	56 338	13·8	6·4	6·1	9·8	4·03	1·22	0·88	6·12
061–089	Endocrine System	505	64·66	135	17·29	141	18·05	781	6 233	76·32	1 068	13·08	866	10·60	8 167	12·3	7·9	6·1	10·5	0·68	0·12	0·09	0·89
100–189	Eye	1 647	33·48	2 089	42·46	1 184	24·07	4 920	14 235	45·85	8 455	27·23	8 359	26·92	31 049	8·6	4·0	7·1	6·3	1·55	0·92	0·91	3·38
190–249	Ear, Nose and Throat	3 405	27·01	6 060	48·07	3 142	24·92	12 607	16 915	36·91	18 106	39·51	10 805	23·58	45 826	5·0	3·0	3·4	3·6	1·84	1·97	1·17	4·98
250–299	Upper Alimentary Tract	1 553	24·88	1 986	31·82	2 703	43·30	6 242	10 286	49·80	4 716	22·83	5 651	27·36	20 653	6·6	2·4	2·1	3·3	1·12	0·51	0·61	2·25
300–349	Thorax	1 574	94·48	32	1·92	60	3·60	1 666	22 071	95·62	190	0·82	821	3·56	23 082	14·0	5·9	13·7	13·9	2·40	0·02	0·09	2·51
380–389	Breast	434	13·93	1 537	49·34	1 144	36·73	3 115	3 302	17·91	9 252	50·18	5 884	31·91	18 438	7·6	6·0	5·1	5·9	0·36	1·01	0·64	2·00
400–559	Abdomen	6 784	36·49	4 706	25·31	7 103	38·20	18 593	71 310	41·91	40 156	23·60	58 672	34·48	170 138	10·5	8·5	8·3	9·2	7·75	4·37	6·38	18·49
560–669	Urinary and Male Genital Organs	3 684	32·93	3 495	31·24	4 007	35·82	11 186	27 749	44·53	14 554	23·35	20 017	32·12	62 320	7·5	4·2	5·0	5·6	3·02	1·58	2·18	6·77
671–739	Female Genital Tract	3 101	13·81	7 147	31·83	12 208	54·36	22 456	18 663	19·35	32 078	33·26	45 719	47·40	96 460	6·0	4·5	3·7	4·3	2·03	3·49	4·97	10·49
740–779	Obstetric	4 197	37·18	3 002	26·59	4 090	36·23	11 289	31 494	36·82	24 640	28·81	29 392	34·37	85 526	7·5	8·2	7·2	7·6	3·42	2·68	3·20	9·30
780–879	Orthopaedic	6 769	40·35	4 480	26·71	5 526	32·94	16 775	91 489	55·57	25 367	15·41	47 792	29·03	164 648	13·5	5·7	8·6	9·8	9·95	2·76	5·20	17·90
880–909	Peripheral Circulation	969	35·34	953	34·76	820	29·91	2 742	9 633	39·97	7 467	30·98	7 003	29·05	24 103	9·9	7·8	8·5	8·8	1·05	0·81	0·76	2·62
910–939	Skin and Subcutaneous Tissue	3 851	29·63	3 721	28·63	5 425	41·74	12 997	32 725	45·70	15 690	21·91	23 198	32·39	71 613	8·5	4·2	4·3	5·5	3·56	1·71	2·52	7·78
940–999	Other Surgical Procedures	6 548	81·26	741	9·20	769	9·54	8 058	33 384	80·30	4 267	10·26	3 925	9·44	41 576	5·1	5·8	5·1	5·2	3·63	0·46	0·43	4·52
	Total, All Operations	47 705	34·27	41 836	30·06	49 643	35·67	139 184	426 527	46·36	217 255	23·62	276 155	30·02	919 937	8·9	5·2	5·6	6·6	46·36	23·62	30·02	100·00

TABLE 17

W.A. HOSPITALS 1977—PATIENTS DISCHARGED BY OPERATION GROUP AND TYPE OF HOSPITAL

Code of Surgical Procedures	Operation Groups	Discharges														State Total
		Metropolitan								Country						
		Teaching		Private		Government		Total		Private		Govt. and Board		Total		
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
001–049	Nervous System	2 684	46·62	1 735	30·14	990	17·20	5 409	93·96	17	0·30	331	5·75	348	6·04	5 757
061–089	Endocrine System	505	64·66	125	16·01	98	12·55	728	93·21	10	1·28	43	5·51	53	6·79	781
100–189	Eye	1 647	33·48	2 070	42·07	897	18·23	4 614	93·78	19	0·39	287	5·83	306	6·22	4 920
190–249	Ear, Nose and Throat	3 405	27·01	5 958	47·26	1 923	15·25	11 286	89·52	102	0·81	1 219	9·67	1 321	10·48	12 607
250–299	Upper Alimentary Tract	1 553	24·88	1 771	28·37	1 090	17·46	4 414	70·71	215	3·44	1 613	25·84	1 828	29·29	6 242
300–349	Thorax	1 574	94·48	26	1·56	36	2·16	1 636	98·20	6	0·36	24	1·44	30	1·80	1 666
380–389	Breast	434	13·93	1 457	46·77	853	27·38	2 744	88·09	80	2·57	291	9·34	371	11·91	3 115
400–559	Abdomen	6 784	36·49	4 335	23·32	4 389	23·61	15 508	83·41	371	2·00	2 714	14·60	3 085	16·59	18 593
560–669	Urinary and Male Genital Organs	3 684	32·93	3 252	29·07	2 569	22·97	9 505	84·97	243	2·17	1 438	12·86	1 681	15·03	11 186
671–739	Female Genital Tract	3 101	13·81	6 819	30·37	8 054	35·87	17 974	80·04	328	1·46	4 154	18·50	4 482	19·96	22 456
740–779	Obstetric	4 197	37·18	2 937	26·02	2 713	24·03	9 847	87·23	65	0·58	1 377	12·20	1 442	12·77	11 289
780–879	Orthopaedic	6 769	40·35	4 272	25·47	2 284	13·62	13 325	79·43	208	1·24	3 242	19·33	3 450	20·57	16 775
880–909	Peripheral Circulation	969	35·34	899	32·79	569	20·75	2 437	88·88	54	1·97	251	9·15	305	11·12	2 742
910–939	Skin and Subcutaneous Tissue	3 851	29·63	3 507	26·98	3 143	24·18	10 501	80·80	214	1·65	2 282	17·56	2 496	19·20	12 997
940–999	Other Surgical Procedures	6 548	81·26	680	8·44	330	4·10	7 558	93·79	61	0·76	439	5·45	500	6·21	8 058
	Total, All Operations	47 705	34·27	39 843	28·63	29 938	21·51	117 486	84·41	1 993	1·43	19 705	14·16	21 698	15·59	139 184

TABLE 18

W.A. HOSPITALS—ACCIDENTS, POISONING AND VIOLENCE—DISCHARGED DURING 1977

I.C.D. Category	External Cause	Number of Cases		Number Days in Hospital		Average Number Days in Hospital		Per Cent of Total Bed Days		Outcome			
		Male	Female	Male	Female	Male	Female	Male	Female	Dis-charged	Trans-ferred	Died	Deaths per 1 000 Separations
800–807	Railway Accidents	14	8	254	209	18·1	26·1	0·10	0·08	222	....	....	....
810–819	Motor Vehicle Traffic Accidents	3 134	1 450	30 999	13 490	9·9	9·3	12·09	5·26	4 309	222	53	11
820–823	Motor Vehicle Non-Traffic Accidents	274	46	2 800	291	10·2	6·3	1·09	0·12	308	10	2	6
825–827	Other Road Vehicle Accidents	340	218	1 594	1 388	4·7	6·4	0·62	0·54	543	14	1	1
830–838	Water Transport Accidents	63	18	620	140	9·8	7·8	0·24	0·05	80	1	....	....
840–845	Air and Space Transport Accidents	24	3	189	107	7·9	35·7	0·07	0·04	23	4	....	....
850–859	Accidental Poisoning by Drugs and Medicaments	367	389	1 945	1 979	5·3	5·1	0·76	0·77	747	6	3	3
860–869	Accidental Poisoning by Other Solid and Liquid Substances	414	240	856	375	2·1	1·6	0·33	0·15	644	10	....	....
870–877	Accidental Poisoning by Gases and Vapours	55	16	109	22	2·0	1·4	0·04	0·01	68	3	....	....
880–887	Accidental Falls	4 280	3 185	30 451	37 324	7·1	11·7	11·88	14·56	6 921	469	75	10
890–899	Accidents Caused by Fires and Flames	550	235	5 736	2 316	10·4	9·9	2·24	0·91	722	53	10	12
900–909	Accidents due to Natural and Environmental Factors	616	367	1 684	995	2·7	2·7	0·66	0·39	968	14	1	1
910–929	Other Accidents	7 615	3 183	35 652	15 318	4·7	4·8	13·91	5·97	10 501	275	22	2
930–936	Surgical and Medical Complications and Misadventures	1 146	1 257	15 584	15 219	13·6	12·1	6·08	5·94	2 265	74	64	26
940–949	Late Effects of Accidental Injury	1 227	654	14 249	8 983	11·6	13·7	5·56	3·51	1 819	45	17	9
950–959	Suicide and Self-inflicted Injury	597	990	2 932	3 655	4·9	3·7	1·14	1·43	1 508	74	5	3
960–969	Homicide and Injury Purposely Inflicted by Other Persons	892	372	5 264	2 545	5·9	6·8	2·05	0·99	1 229	33	2	1
970–978	Legal Intervention	5	....	10	....	2·0	....	0·00	....	5	....	....	....
980–989	Injury Undetermined whether Accidentally or Purposely Inflicted	105	114	542	530	5·2	4·6	0·21	0·21	209	10	....	....
990–999	Injury Resulting from Operations of War	4	....	34	....	8·5	....	0·01	....	4	....	....	....
	Total	21 722	12 745	151 504	104 886	7·0	8·2	59·09	40·91				
	Grand Total, Male and Female	34 467		256 390		7·4		100·00		32 895	1 317	255	7

TABLE 19
SEX-SPECIFIC HOSPITAL DISCHARGE RATES* FOR ACCIDENTAL INJURY (ICD 800-999) W.A., 1971-1977

Year	Male			Female			Total		
	Number	Rate*	Rank†	Number	Rate*	Rank†	Number	Rate*	Rank†
1971	17 834	33·7	1	9 578	19·1	5	27 412	26·6	2
1972	18 569	33·9	1	10 456	20·0	4	29 025	27·1	3
1973	19 418	34·8	1	11 071	20·8	4	30 489	28·0	2
1974	19 951	34·9	1	11 174	20·4	4	31 125	27·8	1
1975‡	19 744	33·7	1	11 468	20·4	5	31 212	27·2	1
1976	19 621	32·9	1	11 386	19·9	5	31 007	26·5	1
1977	20 554	33·7	1	11 799	20·1	5	32 353	27·0	1

* Rate per 1 000 population (A.B.S. population information: 1971–1976 rates revised).

† Ranking of accidental injury in the 18 major groupings of the I.C.D., with (*) being the group with the most discharges, (†) the next largest group, etc.

‡ The drop in absolute numbers and rates in the male group occurred primarily in the 0–4 year age group.

TABLE 21
HOSPITAL DISCHARGES 1977—PERTH STATISTICAL DIVISION

Hospital	Type*	Number of Beds	Percentage of Metropolitan Beds	Number of Discharges	Percentage of Metropolitan Discharges
Armadale/Kelmscott	3	71	1·35	4 709	2·55
Aston	3	29	0·55	1 240	0·67
Attadale	2	54	1·03	3 759	2·04
Avro	2	25	0·48	1 019	0·55
Bentley	3	70	1·33	3 661	1·98
Bethesda	2	58	1·10	2 476	1·34
Devonleigh	3	35	0·67	2 302	1·25
Fremantle	1	436	8·30	13 006	7·04
Glengarry†	2	89	1·69	270	0·15
Harrow	5	15	0·29	154	0·08
Hawthorn	3	29	0·55	2 168	1·17
Kalamunda	3	64	1·22	2 857	1·55
Kaleeya	2	41	0·78	2 653	1·44
King Edward Memorial	1	244	4·65	8 304	4·50
Lucknow	2	22	0·42	88	0·05
Martindale	5	22	0·42	313	0·17
Morna	2	21	0·40	1 243	0·67
Mount	3	93	1·77	4 475	2·42
Mount Henry	3	57	1·09	324	0·18
Niola	5	14	0·27	66	0·04
Oats Street	2	44	0·84	2 943	1·59
Ord Street	3	26	0·50	306	0·17
Osborne Park	3	202	3·85	8 406	4·55
Princess Margaret	1	297	5·66	16 067	8·70
Quo Vadis	3	26	0·50	170	0·09
Repatriation	4	428	8·15	7 525	4·07
Rockingham-Kwinana	3	74	1·41	4 112	2·23
Royal Perth	1	1 051	20·02	32 539	17·62
St. Anne's	2	224	4·27	7 745	4·19
St. John's, Belmont	2	116	2·21	3 454	1·87
St. John's, Subiaco	2	394	7·50	12 944	7·01
St. Joseph's, Bicton	2	37	0·70	1 459	0·79
Sir Charles Gairdner	1	528	10·06	15 283	8·28
South Perth Community	2	67	1·28	3 130	1·69
Stirling	2	87	1·66	5 405	2·93
Swan Districts	3	113	2·15	6 807	3·69
Woodside	3	40	0·76	1 199	0·65
Wooroloo	3	8	0·15	103	0·06
Total	....	5 251	100·00	184 684	100·00

* (1) Teaching Hospitals
(2) Private Hospitals
(3) Government and Board Hospitals
(4) Commonwealth Repatriation
(5) Special Private Hospitals

† Glengarry Hospital opened 14/11/77.

TABLE 20

W.A. HOSPITAL DISCHARGES 1977

External Cause and Nature of Injury of Accidents, Poisoning and Violence

NATURE OF INJURY

I.C.D. Code	External Cause of Injury	Patients Age and Hospital Stay	Fracture of Spine, Skull and Trunk		Fracture of Upper Limb		Fracture of Lower Limb		Dislocation Without Fracture		Sprains and Strains of Joints and Muscles		Intra-cranial Injury Without Skull Fracture		Internal Injury of Chest, Abdomen and Pelvis		Laceration and Open Wound of Head, Neck and Trunk		Laceration and Open Wound of Upper Limb		Laceration and Open Wound of Lower Limb		Laceration and Open Wound of Multiple Location		Superficial Injury		Contusion and Crushing With Intact Skin		Effects of Foreign Body		Burn		Injury to Nerves and Spinal Cord		Adverse Effect of Medicinal Agents		Adverse Effect of Non-Medicinal Substances		Other Adverse Effects		Total	
			N800–N809		N810–N819		N820–N829		N830–N839		N840–N848		N850–N854		N860–N869		N870–N879		N880–N887		N890–N897		N900–N907		N910–N918		N920–N929		N930–N939		N940–N949		N950–N959		N960–N979		N980–N989		N990–N999			
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
800–807	Railway Accidents	Patients	4	1	....	....	3	2	....	....	1	....	1	4	....	....	1	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	14	7
		Avge. Age	36	37	....	....	45	54	....	....	31	....	46	47	....	....	78	....	49	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	34	....	43	47
		Avge. Stay	29·8	36	....	....	34·0	79·0	....	....	4·0	....	2·0	1·3	....	....	2·0	....	1·0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11·5	....	18·1	28·4
810–819	Motor Vehicle Traffic Accidents	Patients	428	203	177	78	390	115	46	14	48	64	960	411	95	33	235	113	53	10	51	26	80	34	81	36	83	76	....	1	24	6	4	4	1	1	....	....	354	215	3 111	1 440
		Avge. Age	31	35	26	33	28	33	29	37	31	29	25	27	28	30	28	28	28	20	23	33	27	27	23	29	28	32	....	27	22	17	36	27	17	21	....	....	26	25	27	29
		Avge. Stay	17·0	16·9	8·5	13·5	25·5	32·1	10·9	14·0	7·2	4·8	5·5	4·1	15·6	16·3	5·0	4·8	5·8	6·1	9·7	9·8	3·7	5·5	4·0	5·1	3·7	3·4	....	3·0	19·4	27·7	4·5	12·0	1·0	1·0	....	....	3·1	3·6	9·9	9·3
820–823	Motor Vehicle Non-Traffic Accidents	Patients	34	6	33	3	45	5	10	1	6	1	61	11	9	1	10	6	6	1	12	2	2	....	4	2	14	2	....	....	1	1	....	....	1	....	....	....	24	4	272	46
		Avge. Age	27	15	22	30	21	15	21	36	17	19	21	19	18	3	25	17	17	1	22	28	51	....	18	5	26	31	....	....	18	17	....	....	6	....	....	....	21	16	22	18
		Avge. Stay	17·8	7·7	7·8	1·7	20·4	9·2	5·4	1·0	6·3	22·0	7·5	5·2	8·1	1·0	2·7	5·5	4·5	3·0	9·3	27·0	12·5	....	2·8	2·0	3·3	2·0	....	....	1·0	7·0	....	....	3·0	....	....	....	3·0	2·0	10·0	6·3
825–827	Other Road Vehicle Accidents	Patients	32	29	57	27	30	17	7	7	2	3	125	83	5	3	11	5	9	2	14	7	1	1	6	4	14	7	....	....	....	2	....	....	....	....	....	....	25	20	338	217
		Avge. Age	20	19	13	14	18	18	24	17	12	29	13	14	21	27	15	7	8	2	11	9	9	9	12	17	25	18	....	....	....	15	....	....	....	....	....	....	21	19	15	15
		Avge. Stay	4·3	17·6	2·8	3·0	15·1	13·2	2·1	1·3	3·0	9·3	2·7	3·6	14·8	18·7	2·2	1·2	5·2	1·5	12·2	5·6	2·0	3·0	3·8	7·5	2·5	2·3	....	....	....	12·0	....	....	....	....	....	....	4·0	2·7	4·7	6·4
830–838	Water Transport Accidents	Patients	12	3	5	1	5	1	1	....	....	....	13	3	1	....	4	....	6	2	6	1	....	....	....	....	2	1	....	....	4	1	....	....	....	1	....	....	2	3	61	17
		Avge. Age	35	19	30	5	35	11	24	....	....	....	25	20	62	....	21	....	28	36	29	20	....	....	....	....	22	17	....	....	24	35	....	....	....	99	....	....	27	15	29	25
		Avge. Stay	10·8	3·3	13·0	2·0	26·2	51·0	23·0	....	....	....	1·8	1·7	3·0	....	5·0	....	5·3	2·5	10·8	28·0	....	....	....	....	4·5	7·0	....	....	9·3	15·0	....	....	....	4·0	....	....	5·0	3·0	9·0	8·0
840–845	Air and Space Transport Accidents	Patients	6	2	3	....	6	....	2	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	1	24	3
		Avge. Age	33	34	16	....	32	....	23	....	....	....	....	....	....	....	....	....	....	....	21	....	34	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35	27	30	32
		Avge. Stay	9·7	19·0	11·7	....	12·3	....	6·0	....	....	....	....	....	....	....	....	....	....	....	3·0	....	1·0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1·2	69·0	7·9	35·7
850–859	Accidental Poisoning by Drugs and Medicaments	Patients	....	....	1	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	298	307	4	6	....	....	304	314
		Avge. Age	....	....	7	....	31	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	56	....	....	....	....	....	....	11	13	2	3	....	....	11	13
		Avge. Stay	....	....	1·0	....	2·0	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3·0	....	....	....	....	....	....	2·9	2·2	3·0	1·3	....	....	2·9	2·2
860–869	Accidental Poisoning by Other Solid and Liquid Substances	Patients	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	403	235	....	1	403	237
		Avge. Age	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	7	5	....	2	7	5
		Avge. Stay	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1·0	....	....	....	....	....	....	....	....	....	....	1·9	1·5	....	1·0	1·9	1·5
870–877	Accidental Poisoning by Gases and Vapours	Patients	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	54	16	....	....	54	16
		Avge. Age	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	24	25	....	....	24	25
		Avge. Stay	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2·0	1·4	....	....	2·0	1·4
880–887	Accidental Falls	Patients	790	424	1 398	1 142	1 056	969	104	51	71	23	486	222	27	10	58	49	13	8	10	16	2	3	10	9	48	47	....	....	1	1	4	3	1	1	....	....	112	122	4 191	3 100
		Avge. Age	34	43	21	34	36	61	29	41	29	28	23	21	31	47	29	28	39	56	43	67	13	71	25	42	37	51	....	....	34	71	24	68	81	79	....	....	29	42	29	44
		Avge. Stay	6·9	10·4	3·7	4·5	13·6	22·8	3·6	3·4	5·3	5·2	3·3	3·3	7·7	11·5	2·6	4·4	6·2	6·8	10·6	20·3	4·5	10·3	3·9	12·3	5·2	6·8	....	....	11·0	15·0	9·5	32·0	40·0	23·0	....	....	4·7	6·2	6·9	11·2
890–899	Accidents Caused by Fires and Flames	Patients	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	538	229	....	....	1	....	3	1	....	....	544	230
		Avge. Age	....	....	....	....	....	....	....	....	....	....	21	....	....	....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	25	21	....	....	3	....	55	1	....	....	25	21
		Avge. Stay	....	....	....	....	....	....	....	....	....	....	1·0	....	....	....	33·0	....	....	....	....	....	....	....	....	....	....	....	....	....	10·5	9·9	....	....	2·0	....	1·0	1·0	....	....	10·5	9·8
900–909	Accidents due to Natural and Environmental Factors	Patients	15	6	9	11	7	8	2	....	....	....	9	15	6	....	17	19	10	8	15	6	3	4	42	32	8	8	2	....	....	....	....	....	....	1	375	199	84	45	604	362
		Avge. Age	24	25	16	10	43	43	37	....	....	....	13	24	44	....	14	10	33	47	27	42	33	21	22	20	29	33	51	....	....	....	....	....	....	15	23	26	30	45	24	27
		Avge. Stay	10·0	9·7	3·1	1·9	14·6	16·9	11·0	....	....	....	2·9	1·5	9·8	....	3·3	2·6	4·5	4·4	4·1	9·0	12·0	1·0	1·5	1·8	3·3	3·0	1·5	....	....	....	....	....	....	1·0	1·5	1·4	4·1	4·8	2·7	2·6
910	Accidental Drowning and Submersion	Patients	2	3	2	....	....	1	....	....	1	....	1	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	48	15	56	20
		Avge. Age	23	21	22	....	....	28	....	....	38	....	8	....	....	10	....	....	....	....	....	....	....	....	....	....	28	....	....	....	....	....	24	....	....	....	....	....	10	13	12	15
		Avge. Stay	22·0	3·7	2·5	....	....	13·0	....	....	5·0	....	2·0	....	....	15·0	....	....	....	....	....	....	....	....	....	....	4·0	....	....	....	....	....	3·0	....	....	....	....	....	2·5	1·3	3·2	3·0
911–912	Inhalation and Ingestion of Food and Other Objects	Patients	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	....	....	....	....	....	1	....	....	....	51	49	....	....	....	....	....	....	....	....	....	1	52	52
		Avge. Age	....	....	....	....	....	....	....	....	....	....	....	....	....	76	....	30	....	....	....	....	....	....	0	....	....	....	27	41	....	....	....	....	....	....	....	....	....	19	26	41
		Avge. Stay	....	....	....	....	....	....	....	....	....	....	....	....	....	1·0	....	1·0	....	....	....	....	....	....	2·0	....	....	....	1·9	2·4	....	....	....	....	....	....	....	....	....	1·0	1·9	2·3
914–915	Foreign Body Accidentally Entering Eye or Orifice	Patients	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14	2	1	....	2	1	....	....	8	8	3	1	219	167	3	....	....	....	....	....	....	1	....	1	250	181
		Avge. Age	....	....	....	....	....	....	....	....	....	....	....	....	....	....	19	32	17	....	12	30	....	....	13	3	28	3	22	24	17	....	....	....	....	....	....	75	....	6	22	23
		Avge. Stay	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9·7	1·5	1·0	....	1·0	5·0	....	....	7·9	2·6	3·7	15·0	2·2	2·5	1·7	....	....	....	....	....	....	2·0	....	1·0	2·8	2·1
920	Accidents Caused by Cutting or Piercing Instruments	Patients	1	....	40	1	6	....	....	....	....	....	8	2	1	2	150	91	692	159	354	184	29	18	6	2	2	3	3	....	....	....	11	4	....	....	....	....	7	1	1 310	467
		Avge. Age	38	....	39	30	32	....	....	....	....	....	23	24	72	13	19	22	29	29	21	24	26	26	16	20	25	32	28	....	....	....	26	36	....	....	....	....	56	59	26	26
		Avge. Stay	17·0	....	2·2	2·0	5·8	....	....	....	....	....	1·5	1·0	11·0	3·5	4·8	3·6	2·8	2·9	3·9	4·4	3·4	5·4	2·7	4·0	6·0	4·3	2·0	....	....	....	2·1	2·5	....	....	....	....	10·7	2·0	3·4	3·7
913 916–919 921–929	Other Accidents	Patients	231	54	179	33	122	29	260	103	339	169	1 228	565	77	15	497	239	568	128	305	146	94	58	149	65	480	203	8	5	376	157	28	15	1	3	....	....	922	425	5 864	2 412
		Avge. Age	26	21	27	21	27	37	28	34	33	37	19	17	27	24	27	29	30	27	26	34	31	31	23	27	26	34	41	9	21	19	29	28	12	66	....	....	32	38	26	28
		Avge. Stay	7·8	3·7	8·3	5·2	12·5	5·9	4·0	3·8	5·7	5·8	2·7	2·0	8·3	8·7	4·0	3·5	4·2	4·1	6·7	7·9	5·5	4·7	4·9	4·5	4·6	5·3	1·9	1·0	7·9	12·9	4·4	4·0	2·0	12·0	....	....	5·5	6·6	5·0	5·1
930–936	Surgical and Medical Complications and Misadventures	Patients	2	....	....	1	....	1	....	....	....	....	....	....	....	....	2	1	....	....	1	1	....	....	1	1	....	....	....	3	1	1	1	1	119	164	2	1	511	565	640	740
		Avge. Age	25	....	....	14	....	88	....	....	....	....	....	....	....	....	30	21	....	....	22	79	....	....	35	13	....	....	....	24	15	75	35	42	47	48	36	48	37	35	39	38
		Avge. Stay	14·0	....	....	10·0	....	11·0	....	....	....	....	....	....	....	....	3·5	1·0	....	....	13·0	33·0	....	....	1·0	5·0	....	....	....	4·7	27·0	22·0	3·0	1·0	8·4	6·6	2·5	5·0	6·7	7·3	7·0	7·2
940–949	Late Effects of Accidental Injury	Patients	84	43	98	38	78	47	37	6	35	34	39	14	11	....	27	14	57	17	16	8	4	2	1	....	9	4	....	1	39	20	36	6	2	1	1	....	347	247	921	502
		Avge. Age	31	29	29	39	40	57	35	43	39	33	28	31	38	....	22	17	24	21	21	27	39	60	51	....	47	49	....	43	11	10	33	36	71	47	2	....	41	47	34	41
		Avge. Stay	13·7	20·3	7·6	4·7	17·4	24·0	9·5	8·8	4·9	4·6	11·9	6·9	7·0	....	6·4	6·4	3·6	3·8	9·5	13·3	10·8	29·0	6·0	....	4·4	8·5	....	8·0	11·6	18·4	6·1	11·3	4·5	2·0	16·0	....	13·0	13·6	11·0	13·2
950–959	Suicide and Self-Inflicted Injury	Patients	4	....	....	....	1	1	....	....	....	....	2	....	6	1	10	2	41	33	2	....	3	1	....	....	2	1	1	1	6	4	....	1	454	894	43	20	5	5	580	964
		Avge. Age	32	....	....	....	31	55	....	....	....	....	26	....	27	22	40	45	30	25	29	....	42	44	....	....	....	23	25	23	29	58	....	20	32	31	30	36	29	30	32	31
		Avge. Stay	55·8	....	....	....	14·0	18·0	....	....	....	....	1·0	....	15·8	10·0	16·4	7·5	3·7	2·6	1·0	....	1·7	5·0	....	....	1·0	1·0	6·0	1·0	22·3	28·0	....	6·0	3·7	3·3	3·4	6·1	26·2	5·8	4·7	3·4
960–969	Homicide and Injury Purposely Inflicted by Other Persons	Patients	231	63	25	17	33	10	3	1	2	....	294	81	16	9	101	40	18	8	15	5	18	11	9	11	40	24	....	....	3	2	2	....	1	....	....	....	53	82	864	364
		Avge. Age	20	29	31	33	36	38	34	30	38	....	29	31	30	32	35	34	29	27	30	37	34	25	36	27	26	38	....	....	48	37	34	....	41	....	....	....	23	25	30	30
		Avge. Stay	8·6	7·8	4·1	21·2	15·2	19·4	1·0	4·0	1·0	....	3·0	6·0	11·3	13·0	5·2	4·4	3·4	5·6	5·5	6·4	4·6	3·5	2·8	2·3	3·2	3·0	....	....	4·3	5·5	6·0	....	16·0	....	....	....	6·5	4·7	5·7	6·7
970–978	Legal Intervention	Patients	....	....	....	....	1	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....
		Avge. Age	....	....	....	....	25	....	....	....	....	....	36	....	....	....	....	....	....	....	....	....	....	....	....	....	24	....	....	....	....	....	....	....	....	....	....	....	....	....	29	....
		Avge. Stay	....	....	....	....	1·0	....	....	....	....	....	1·0	....	....	....	....	....	....	....	....	....	....	....	....	....	3·5	....	....	....	....	....	....	....	....	....	....	....	....	....	2·0	....
980–989	Injury Undetermined Whether Accidentally or Purposely Inflicted	Patients	4	....	....	1	....	1	2	....	2	....	2	....	2	....	4	....	4	1	....	....	1	....	....	....	1	....	....	1	....	....	....	....	50	98	14	6	4	....	90	108
		Avge. Age	28	....	....	40	....	55	24	....	25	....	34	....	21	....	27	....	23	35	....	....	60	....	....	....	51	....	....	60	....	....	....	....	29	33	35	26	23	....	29	33
		Avge. Stay	3·0	....	....	7·0	....	21·0	1·0	....	9·0	....	1·5	....	3·5	....	4·0	....	2·3	1·0	....	....	1·0	....	....	....	5·0	....	....	2·0	....	....	....	....	3·0	3·7	2·6	1·2	4·5	....	3·1	3·7
990–999	Injury Resulting from Operations of War	Patients	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....
		Avge. Age	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	51	....
		Avge. Stay	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3·5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3·5	....
OTALS	ALL EXTERNAL CAUSES	Patients	1 880	837	2 027	1 353	1 784	1 207	474	183	508	294	3 232	1 411	256	76	1 142	582	1 480	377	806	403	238	132	318	171	709	378	284	228	996	424	87	34	929	1 471	899	485	2 505	1 753	20 554	11 799
		Avge. Age	31	36	23	33	33	56	29	35	33	34	24	21	29	30	26	27	29	28	23	30	29	30	23	25	28	36	24	28	23	20	31	34	27	29	17	16	32	36	27	32
		Avge. Stay	10·2	12·1	4·5	5·2	16·5	23·2	5·1	4·5	5·8	5·5	3·8	3·2	11·4	13·0	4·6	3·9	3·6	3·6	5·8	7·2	4·7	5·2	4·1	4·3	4·4	4·9	2·1	2·5	9·8	11·8	5·0	8·5	4·1	3·5	1·9	1·6	6·3	7·2	6·4	7·4

TABLE 22

PERTH STATISTICAL DIVISION, 1977

Hospitalised Non-Metropolitan Patients by Statistical Division of Residence and Type of Hospital

Statistical Division of Residence	Discharges				
	Number	Per Cent			
		Total	Teaching	Other Govt. and Board	Private
South West	5 157	21·03	11·93	3·72	5·38
Lower Great Southern	1 808	17·04	9·13	2·29	5·63
Upper Great Southern	1 323	15·51	7·75	2·32	5·44
Midlands	4 012	26·01	12·39	5·37	8·25
South Eastern	1 991	15·02	7·64	2·73	4·65
Central	3 041	20·71	11·30	3·12	6·29
Pilbara	2 104	18·19	10·58	2·09	5·53
Kimberley	541	7·73	5·63	1·07	1·03

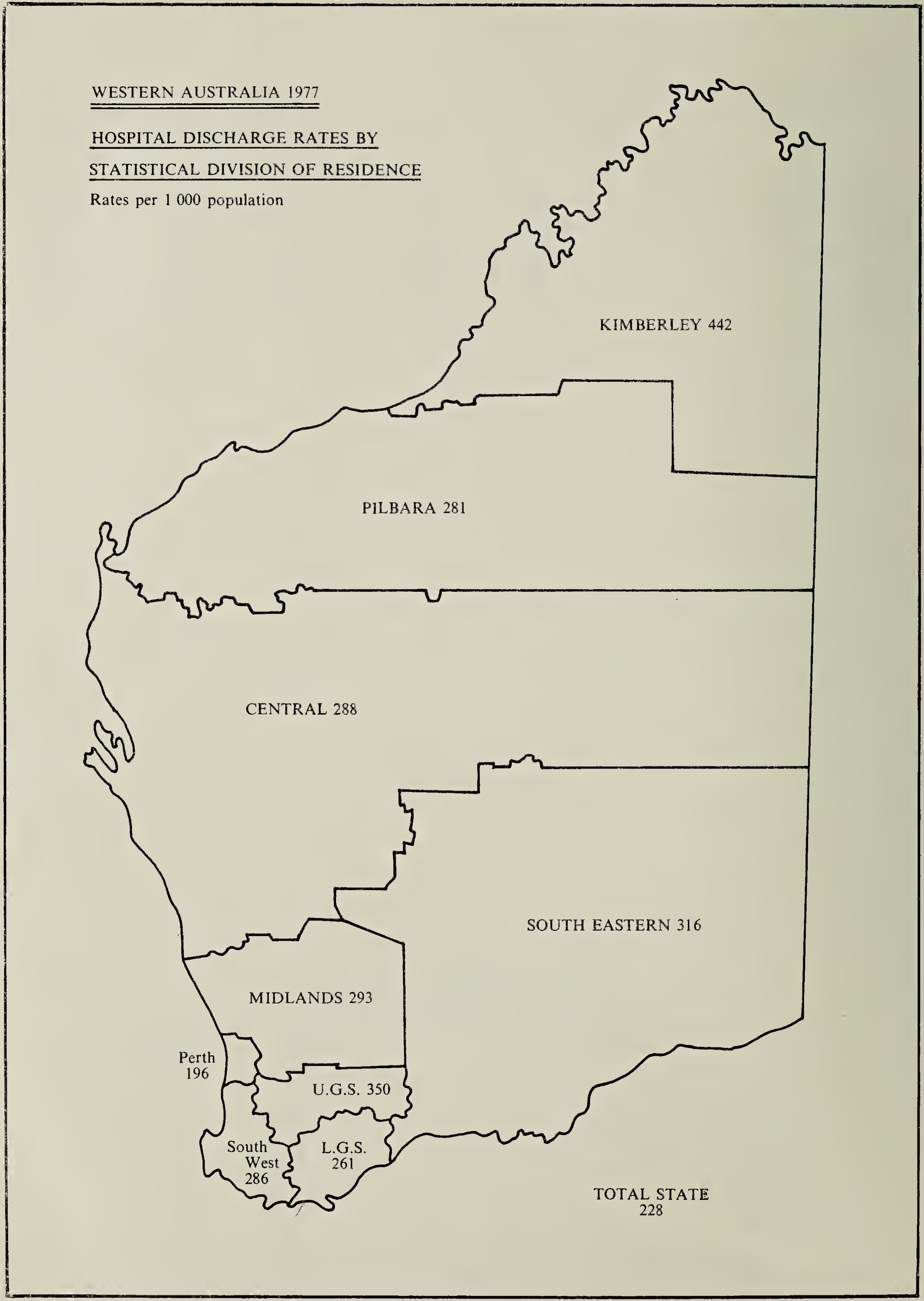
TABLE 23

DISCHARGES FROM W.A. HOSPITALS BY STATISTICAL DIVISION OF RESIDENCE

Statistical Division	Number*	Rate/1 000 Population
Perth	165 509	196
South West	24 518	286
Lower Great Southern	10 608	261
Upper Great Southern	8 534	350
Midlands	15 424	293
South Eastern	13 257	316
Central	14 684	288
Pilbara	11 565	281
Kimberley	7 002	442
Metropolitan (Perth)	165 509	196
Rural (All Others)	105 590	299
Total State*	271 099	228

* Does not include 2 201 discharges for which Geographical Location was inaccurate or incomplete.

TABLE 24



WESTERN AUSTRALIA 1977

HOSPITAL DISCHARGE RATES BY STATISTICAL DIVISION OF RESIDENCE

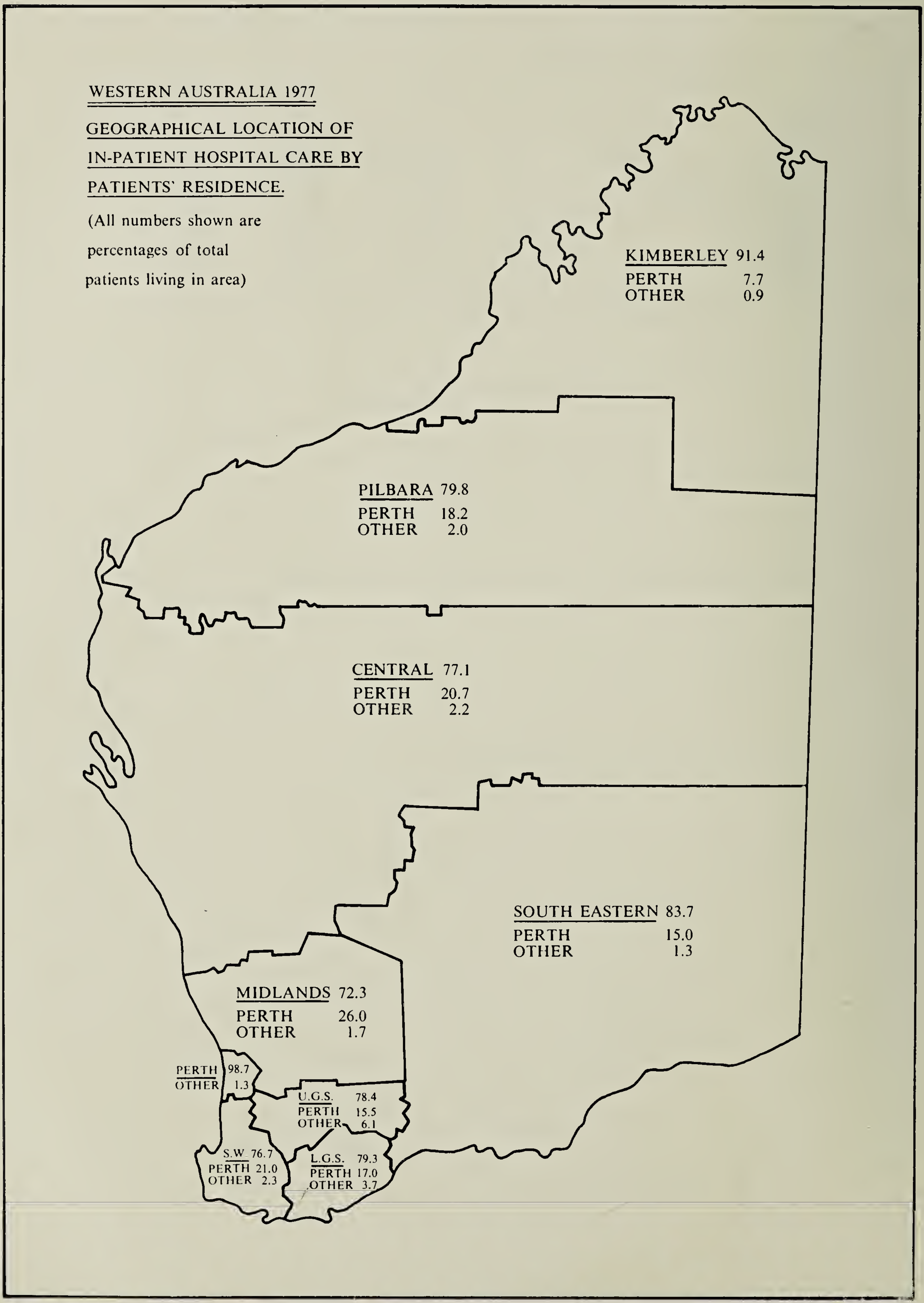
Rates per 1 000 population

TABLE 25

GEOGRAPHICAL LOCATION OF IN-PATIENT HOSPITAL CARE BY PATIENTS RESIDENCE, W.A.—1977

Statistical Division of Residence	Statistical Division of Hospitalisation		
	Home %	Perth %	Other %
Perth	....	98·70	1·30
South West	76·67	21·03	2·29
Lower Great Southern	79·31	17·04	3·65
Upper Great Southern	78·39	15·51	6·11
Midlands	72·27	26·01	1·72
South Eastern	83·65	15·02	1·34
Central	77·08	20·71	2·21
Pilbara	79·76	18·19	2·05
Kimberley	91·36	7·73	0·91

TABLE 26



WESTERN AUSTRALIA 1977

GEOGRAPHICAL LOCATION OF IN-PATIENT HOSPITAL CARE BY PATIENTS' RESIDENCE.

(All numbers shown are percentages of total patients living in area)

Appendix XVII

Derby Leprosarium

ADMISSIONS AND DISCHARGES FOR 1977

Month	Admissions							Discharges									Inmates Remaining in Leprosarium		
	Male			Female			Total Male and Female	Male				Female				Total Male and Female	Male	Female	Total Male and Female
	Ad-mitted	Re-Ad-mitted	Total	Ad-mitted	Re-Ad-mitted	Total		Dis-charged	De-ceased	Ab-sconded	Total	Dis-charged	De-ceased	Ab-sconded	Total				
January	1	1	2	....	1	1	3	....	....	....	....	....	....	....	....	....	20	21	41
February	2	1	3	1	2	3	6	2	....	....	2	3	....	....	3	5	21	21	42
March	....	3	3	....	1	1	4	1	....	....	1	....	....	....	....	1	23	22	45
April	5	3	8	....	3	3	11	3	....	....	3	4	....	....	4	7	28	21	49
May	....	....	....	....	....	....	....	2	....	....	2	2	....	....	2	4	26	19	45
June	....	3	3	....	1	1	4	....	....	....	....	3	....	....	3	3	29	17	46
July	....	2	2	....	1	1	3	4	....	....	4	....	....	....	....	4	27	18	45
August	1	4	5	....	1	1	6	8	....	....	8	3	....	....	3	11	24	16	40
September	....	....	....	1	....	1	1	5	....	....	5	2	....	....	2	7	19	15	34
October	....	3	3	1	1	2	5	....	....	....	....	....	....	....	....	....	22	17	39
November	3	2	5	....	....	....	5	3	....	....	3	2	....	....	2	5	24	15	39
December	....	....	....	....	....	....	....	3	....	....	3	....	....	....	....	3	21	15	36
Total	12	22	34	3	11	14	48	31	....	....	31	19	....	....	19	50	....	....	....

Appendix XVIII

INCIDENCE AND MORTALITY OF NOTIFIABLE DISEASES

Diseases Notifiable	1974		1975		1976		1977	
	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths	Cases Notified	Deaths
Amoebiasis	2	....	3	....	4	1	5	....
Ancylostomiasis	3	....	3	1	20	....	17	....
Anthrax	....	....	....	....	....	....	....	....
Bacillary Dysentery	165	....	159	1	134	....	113	....
Bilharziasis	2	....	....	....	....	....	....	....
Brucellosis	2	....	1	....	....	....	1	....
Cholera	....	....	....	....	....	....	....	....
Diphtheria	....	....	....	....	....	....	....	....
Encephalitis Lethargic	....	2	....	1	....	1	....	*1
Filariasis	C.O.S. 1	....	....	....	....	....	....	....
Homologous Serum Jaundice	....	....	....	....	12	....	9	....
Hydatid	....	1	....	2	....	....	1	1
Infective Hepatitis	247	1	258	2	272	6	211	2
Leprosy	17	3	15	1	20	....	17	....
Leptospirosis	1	....	2	....	1	....	....	....
Malaria	C.O.S. 4	....	C.O.S. 24	....	C.O.S. 14	....	C.O.S. 24	....
Meningococcal Infection	2	5	3	....	12	1	3	....
Ornithosis	....	....	....	....	....	1	1	....
Paratyphoid	....	....	....	....	1	....	1	....
Plague	....	....	....	....	....	....	....	....
Poliomyelitis	....	....	....	1	....	....	....	1
Puerperal Fever	....	....	1	2	2	....	....	....
Relapsing Fever	....	....	....	....	....	....	....	....
Salmonella Infection (A)	149	1	159	1	166	....	247	....
Scarlet Fever	8	....	1	....	4	....	11	....
Small Pox	....	....	....	....	....	....	....	....
Tetanus	....	....	....	1	....	....	1	....
Tuberculosis	137	10	166	17	110	4	155	10
Typhus Fever	....	....	....	....	....	....	....	....
Typhoid Fever	1	....	....	....	....	....	....	....
Yellow Fever	....	....	....	....	....	....	....	....

C.O.S. — Contracted out of State (A) Other salmonella infection
* Dawsons Encephalitis.

Appendix XIX

TABLE 1
VITAL STATISTICS (BIRTHS, DEATHS)

	1972	1973	1974	1975	1976	1977
Mean Population—						
Males	547 600 (c)	557 400 (c)	571 000 (c)	585 200 (c)	596 700 (c)	609 800
Females	523 100 (c)	533 200 (c)	546 800 (c)	561 700 (c)	573 600 (c)	587 300
Births—						
Males	11 337	10 557	10 282	10 460	10 663	10 717
Females	10 840	9 953	9 925	9 878	10 007	9 934
Total	22 177	20 510	20 207	20 338	20 670	20 651
Birth rate per 1 000 of Mean Population	20·71	18·81	18·08	17·73	17·66	(*d*) 17·25
Deaths—						
Males	4 317	4 586	4 550	4 701	4 480	4 533
Females	3 124	3 259	3 228	3 271	3 260	3 366
Total	7 441	7 845	7 778	7 972	7 740	7 899
Death rate per 1 000 of Mean Population	6·95	7·19	6·96	6·95	6·61	6·60
Natural increase rate per 1 000 of Mean Population	13·76	11·61	11·12	10·78	11·05	10·65
Infant Mortality per 1 000 Live Births—						
Perth Statistical Division	13·1	16·0	13·1	11·2	10·9	11·3
Rest of State	20·6	25·1	22·2	17·5	17·4	13·7
Whole of State	15·7	19·2	16·2	13·3	13·2	12·2
Stillbirths (*b*)—						
Perth Statistical Division	173	173	170	146	156	120
Whole State	258	270	274	236	242	190
Stillbirth rate per 1 000 total births	11·50	12·99	13·38	11·47	11·6	9·12

(*a*) Includes events among the total population, including Aborigines.

(*b*) The term "stillbirth" for registration purposes refers to a child not born alive, of at least 20 weeks gestation, or at least 400 grammes weight.

(*c*) Revised.

(*d*) Preliminary.

Note: Rates have been revised as a result of revision to the mean populations on which they are based.

TABLE 2
WESTERN AUSTRALIA STILLBIRTH AND BIRTH RATES (*a*)

Year	Mean Population Year Ended 31st December	Live Births		Stillbirths (*b*)		Total Births	
		Number	Rate per 1 000 Mean Population	Number	Rate per 1 000 Total Births	Number	Rate per 1 000 Women Aged 15–44
1953	621 034	15 862	25·54	268	16·62	16 130	124·2
1954	639 963	15 928	24·89	270	16·67	16 198	122·1
1955	657 323	16 623	25·29	239	15·17	16 862	124·8
1956	674 459	16 916	25·08	226	13·18	17 142	125·0
1957	687 448	16 924	24·62	248	14·44	17 172	124·0
1958	699 915	16 731	23·90	225	13·27	16 956	121·2
1959	711 737	17 111	24·04	225	12·98	17 336	122·9
1960	722 900	16 926	23·41	226	13·18	17 152	120·6
1961	737 596	17 078	23·15	240	13·86	17 318	118·0
1962	766 205	17 064	22·58	203	11·76	17 267	114·1
1963	788 457	17 290	22·23	178	10·19	17 468	111·5
1964	808 300	16 685	20·93	170	10·09	16 855	104·5
1965	826 481	16 186	19·85	181	11·06	16 367	98·1
1966	849 112	17 194	20·25	174	10·02	17 368	99·5
1967	879 815	18 023	20·48	188	10·32	18 211	99·3
1968	915 757	19 541	21·34	243	12·28	19 784	102·4
1969	955 660	20 754	21·72	250	11·90	21 004	103·5
1970	994 201	21 618	21·74	295	13·46	21 913	103·2
1971	(*c*) 1 042 300	24 239	(*c*) 23·26	298	12·15	24 537	111·5
1972	(*c*) 1 070 700	22 177	(*c*) 20·71	258	11·50	22 435	99·7
1973	(*c*) 1 090 600	20 510	(*c*) 18·81	270	12·99	20 780	89·9
1974	(*c*) 1 117 700	20 207	(*c*) 18·08	274	13·38	20 481	85·5
1975	(*c*) 1 146 900	20 336	(*c*) 17·73	236	11·47	20 574	83·0
1976	(*c*) 1 170 300	20 670	(*c*) 17·66	242	11·57	20 912	82·8
1977	(*d*) 1 197 000	20 651	(*d*) 17·25	190	9·12	20 841	N.A.

(*a*) Mean Population: Figures prior to 1962 exclude full-blood Aborigines.
Births: For 1965 and earlier years figures exclude full-blood Aborigines; from 1966 Aborigines are included.
A line drawn across the columns indicates a break in the series.
Birth rates from 1966 have been revised in accordance with the final results of the 1971 Census.

(*b*) From 1st January, 1968 the term "stillbirth" for registration purposes, refers to a child of at least 20 weeks gestation, not born alive. Previously it was restricted to cases where the gestation period was at least 28 weeks.

(*c*) Mean Population 1971–1976 revised in accordance with final results of 1976 Census.

(*d*) Preliminary.

TABLE 3

STILLBIRTH AND INFANT MORTALITY RATES W.A. (*a*)

Year	Total Births Including Stillbirths	Stillbirth Rates	Under One Week	Mortality Rates Under One Month	One Month and Under One Year	Total Mortality Rates Under One Year	Total Mortality Rates Under One Year Including Stillbirths
1950	14 468	16·6	16·2	18·0	8·6	26·7	43·3
1951	15 091	19·7	16·2	19·7	8·5	28·2	47·9
1952	15 697	18·1	15·5	17·7	6·9	24·5	42·6
1953	16 130	16·6	13·4	16·2	7·3	23·4	40·0
1954	16 198	16·7	14·2	15·8	6·4	22·2	38·9
1955	16 862	14·2	13·3	15·8	6·3	22·1	36·3
1956	17 142	13·2	13·0	15·7	6·7	22·4	35·6
1957	17 172	14·4	13·6	14·9	5·9	20·8	35·2
1958	16 956	13·3	12·8	14·2	7·1	21·2	34·5
1959	17 336	13·0	12·3	13·6	6·3	19·9	32·9
1960	17 152	13·2	13·9	15·7	5·7	21·3	34·5
1961	17 318	13·9	10·3	12·6	6·8	19·4	33·3
1962	17 267	11·8	12·6	14·3	7·7	22·0	33·8
1963	17 468	10·2	12·3	14·7	5·5	20·2	30·4
1964	16 855	10·1	11·8	12·9	6·6	19·5	29·5
1965	16 367	11·1	12·8	15·0	6·5	21·4	32·5
1966	17 368	10·0	12·4	14·4	5·4	19·7	29·8
1967	18 211	10·3	11·4	13·0	4·3	17·2	27·6
1968	19 784	12·3	13·3	14·7	5·5	20·1	32·3
1969	21 004	11·9	13·9	15·3	6·2	21·6	33·5
1970	21 913	13·5	12·4	14·4	6·6	20·9	34·4
1971	24 537	12·1	11·0	12·4	6·5	18·9	31·1
1972	22 435	11·5	9·2	10·3	5·2	15·5	27·0
1973	20 780	13·0	10·9	12·7	6·3	19·0	32·0
1974	20 481	13·4	9·1	10·6	5·3	16·0	29·3
1975	20 574	11·5	8·0	9·0	4·1	13·2	24·6
1976	20 912	11·6	7·2	8·4	4·6	13·1	24·6
1977	20 841	9·1	6·6	8·4	3·6	12·0	21·2

(*a*) For 1965 and earlier years, exclude Full-blood Aborigines. From 1966, Aborigines are included. In above table all rates are calculated in deaths per 1 000 total births, including stillbirths.
For 1968 and later years, the term "stillbirth" refers to a child of at least 20 weeks gestation or birth weight of at least 400 grams not born alive. Prior to 1968, "stillbirth" referred to a child of at least 28 weeks gestation, not born alive.

TABLE 4

INFANT MORTALITY* W.A., 1950-77

Year	Live Births	Infant Mortality Per 1 000 Live Births
1950	14 228	27·1
1951	14 794	28·7
1952	15 413	24·9
1953	15 862	23·8
1954	15 928	22·5
1955	16 623	22·4
1956	16 916	22·7
1957	16 924	21·1
1958	16 731	21·5
1959	17 111	20·2
1960	16 926	21·6
1961	17 078	19·7
1962	17 064	22·3
1963	17 290	20·4
1964	16 685	19·7
1965	16 186	21·7
1966	17 194	19·9
1967	18 023	17·4
1968	19 541	20·4
1969	20 754	21·8
1970	21 618	21·2
1971	24 239	19·1
1972	22 177	15·7
1973	20 510	19·2
1974	20 207	16·2
1975	20 338	13·3
1976	20 670	13·2
1977	20 651	12·2

* For 1965 and earlier years, exclude full-blood Aborigines. From 1966 Aborigines are included.
Infant mortality defined as deaths occurring from birth to one year of age.

TABLE 5

STILLBIRTH AND INFANT MORTALITY RATES (*a*) (*b*)
AUSTRALIA AND NEW ZEALAND

Area of Registration	Total Births Including Stillbirths (*c*)	Stillbirth Rates (*c*)	Infant Mortality Rates				Total Mortality Infant Deaths and Stillbirths
			Under one Week	Under one Month	One Month and Under One Year	Total Under One Year	
1976—							
New Zealand	55 528	7·6	N.A.	N.A.	N.A.	13·8	21·4
1977—							
Western Australia	20 841	9·1	6·6	8·4	3·6	12·0	21·2
New South Wales	78 754	9·6	7·5	8·7	3·4	12·1	21·7
Victoria	60 085	9·4	6·4	7·6	3·2	10·9	20·3
Queensland	35 205	7·7	8·4	9·8	3·8	13·6	21·2
Tasmania	6 805	10·3	7·8	8·5	6·0	14·5	24·8
South Australia	19 438	9·2	6·9	8·2	3·2	11·4	20·5

(*a*) Rates calculated per 1 000 total births, including stillbirths.
(*b*) Infant mortality refers to deaths which occur from birth to one year of age.
(*c*) The term "stillbirth" refers to a child, not born alive, of at least 20 weeks gestation, or at least 400 grammes weight for all Australian States and of at least 28 weeks gestation for New Zealand.

TABLE 6

MATERNAL MORTALITY RATES PER THOUSAND LIVE BIRTHS
AUSTRALIA AND NEW ZEALAND 1968–77

Place	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Western Australia	0·26	0·14	0·14	0·12	0·14	0·24	0·10	0·10	0·15	Nil
New Zealand (*a*)	0·24	0·20	0·22	0·22	0·14	0·19	0·17	0·20	N.A.	N.A.
New South Wales	0·34	0·17	0·25	0·15	0·10	0·08	0·14	0·40	0·11	0·04
Victoria	0·20	0·14	0·25	0·23	0·10	0·04	0·03	0·06	0·15	0·07
Queensland	0·31	0·22	0·21	0·25	0·15	0·29	0·16	Nil	0·14	0·09
Tasmania	0·48	0·12	0·37	Nil	0·13	Nil	0·14	Nil	0·30	Nil
South Australia	0·14	0·32	0·31	0·22	0·18	0·10	0·20	0·15	0·05	0·05

(*a*) Non-Maori. N.A. — Not Available.

TABLE 7

MATERNAL MORTALITY

Period	Average Annual Live Births	Average Annual Maternal Deaths	Average Annual Rate
1901–1905	6 681	28·0	4·19
1906–1910	7 691	43·4	5·64
1911–1915	8 844	39·4	4·46
1916–1920	7 726	41·4	5·36
1921–1925	8 056	34·2	4·25
1926–1930	8 748	46·8	5·35
1931–1935	8 062	35·4	4·39
1936–1940	8 877	32·4	3·65
1941–1945	10 408	24·4	2·34
1946–1950	13 130	21·4	1·63
1951–1955	15 724	13·8	0·88
1956–1960	16 922	8·2	0·48
1961–1965	16 861	5·0	0·30
1966–1970	19 426	4·0	0·21
1971–1975	21 494	3·0	0·14

TABLE 8

Year	Live Births	Deaths from									
		Puerperal Septicaemia		Other Puerperal Infection		Abortion		All Other Complications of Pregnancy and of the Puerperal State		All Complications of Pregnancy and the Puerperal State	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1949	13 511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	14 288	....	....	2	0·14	1	0·07	10	0·70	13	0·91
1951	14 794	....	....	2	0·14	3	0·20	11	0·74	16	1·08
1952	15 413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	15 862	....	....	....	....	1	0·06	8	0·50	9	0·57
1954	15 928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	16 623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	16 916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	16 924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	16 731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	17 111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	16 926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	17 078	....	....	....	....	2	0·12	5	0·29	7	0·41
1962	17 064	....	....	....	....	1	0·06	4	0·23	5	0·29
1963	17 290	....	....	....	....	1	0·06	3	0·17	4	0·23
1964	16 685	....	....	....	....	3	0·18	3	0·18	6	0·36
1965	16 186	....	....	....	....	1	0·06	2	0·12	3	0·19
1966	17 194	....	....	....	....	1	0·06	6	0·35	7	0·41
1967	18 023	....	....	....	....	....	....	2	0·11	2	0·11
1968	19 541	....	....	....	....	....	....	5	0·26	5	0·26
1969	20 754	....	....	....	....	....	....	3	0·14	3	0·14
1970	21 618	....	....	....	....	....	....	3	0·14	3	0·14
1971	24 239	1	0·04	....	....	....	....	2	0·08	3	0·12
1972	22 177	....	....	....	....	1	0·05	2	0·09	3	0·15
1973	20 510	....	....	....	....	....	....	5	0·24	5	0·24
1974	20 207	1	0·05	....	....	....	....	1	0·05	2	0·10
1975	20 338	2	0·10	....	....	....	....	....	....	2	0·10
1976	20 670	....	....	....	....	....	....	3	0·15	3	0·15
1977	20 651	....	....	....	....	....	....	....	....	....	....

(All rates per thousand live births)

TABLE 9

COMPARISON OF INFANT MORTALITY AND GENERAL DEATH RATE AUSTRALIA AND NEW ZEALAND 1973–1977

Place	Infant Mortality Rate (*a*)					General Death Rate (*c*)				
	1973	1974	1975	1976	1977	1973	1974	1975	1976	1977
New Zealand (*b*)	16·2	15·5	16·0	....	N.A.	8·50	8·30	8·14	8·17	8·30
Western Australia	19·2	16·2	13·3	13·2	12·2	7·19	6·96	6·95	6·61	6·60
New South Wales	17·1	16·6	15·2	14·7	12·2	8·58	9·09	8·29	8·57	8·15
Victoria	14·3	14·9	13·0	11·6	11·0	8·46	8·40	7·93	8·21	7·79
Queensland	17·5	15·7	15·0	15·2	13·7	8·41	8·87	7·88	8·17	7·68
South Australia	18·7	15·5	11·1	14·6	11·5	8·07	8·28	7·94	7·92	7·66
Tasmania	13·5	16·2	18·3	11·5	14·7	8·46	8·72	8·26	8·32	7·97

N.A. Denotes not available.
(*a*) Infant deaths per thousand live births. (Deaths under one year of age.)
(*b*) Includes Maoris.
(*c*) Rates have been revised as a result of revision to the mean population in accordance with final results of the 1976 census.

Appendix XX

Public Health Department

REVENUE FOR YEAR ENDED 31/12/77

	$	$
LICENSES—		
Anatomy	352	
Fumigation	196	
Maternity Homes	14	
Poisons Act	8 942	
Radioactive Substances Act	1 482	
Optical Dispensers	30	
Private Hospitals	3 472	
Clean Air Act	16 159	
		30 647
FEES—		
Fish Inspection	31 385	
Meat Inspection	448 615	
Building Inspection	4 580	
Perth Medical Officers	1 119	
Pest Control Collections	2 061	
Pesticides Registration	4 587	
Septic Tank Plans	43 784	
		536 131
MISCELLANEOUS—		
Other	84 244	
Staff Rents	92 307	
Sale of Biscuits	37	
Recoup of V.D. Costs	206 031	
Recoup of T.B. Costs	232 103	
Busselton Health Centre	7 063	
Mandurah Health Centre	5 377	
Geraldton Health Centre	2 471	
South Hedland Health Centre	1 078	
Karratha Health Centre	8 840	
X-Ray Examinations Other....	13 425	
Sale of Publications—Noise Abatement	307	
Commonwealth Grant	13 446 739	
Charges—Medical Photography	483	
		14 100 505
LABORATORIES—Fees and Services		147 303
DENTAL—Fees		349 158
GRAND TOTAL		$15 163 744

EXPENDITURE FOR YEAR ENDED 31/12/77

			$
1.	SALARIES Including Administration and other Health Services		3 135 821
2.	ADMINISTRATION EXPENSES		353 900
3.	PAYROLL TAX		945 813
4.	GOVERNMENT PRINTER		1 738
5.	CHILD HEALTH SERVICES—		
	Salaries	2 673 500	
	Generally	405 868	
			3 079 368
6.	DENTAL HEALTH SERVICES—		
	Salaries	3 760 168	
	Generally	474 596	
	Therapy Centres	229 177	
	Training Centres	209 918	
	Dental Clinics	310 855	
			4 984 714
7.	EPIDEMIOLOGY—		
	Salaries	157 908	
	Generally	69 358	
			227 266
8.	COMMUNITY HEALTH SERVICES—		
	Salaries	3 544 917	
	Generally	2 118 567	
			5 663 484
9.	COMMUNITY HEALTH PROGRAMME—		
	Salaries	1 129 571	
	Generally	1 077 544	
			2 207 115
10.	LABORATORIES—		
	Salaries	4 607 152	
	Laboratory Cadets	2 991 706	
	Generally		7 598 858
11.	OTHER HEALTH SERVICES—		
	Health Services Centre	32 327	
	Pharmaceutical Services	19 749	
	Statistics	73 967	
	Health Surveyors and Inspectors	73 239	
	Pest Control	9 104	
	Occupational Health	80 610	
	Clean Air Act	89 984	
	Abatement of Noise	69 738	
	Radioactive Substances	655	
	Physics Division	40 377	
	V.D. Control	23 704	
	Library	68 912	
	Poliomyelitis	5 792	
	Miners X-Rays	23 429	
	Pre-School Day Care	10 744	
	Health Services Planning and Research	141 223	
	Poisons Information Centre	24 613	
	Chiropody Services	21 117	
	Guthrie Testing—P.M.H.	9 944	
	Food and Nutrition	924	
	Ord River Ecological Research	59 430	
			879 582
12.	T.B. CONTROL—		
	Salaries	518 898	
	Generally	165 167	
			684 065
	GRAND TOTAL		$29 761 724

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